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EOSDIS Core System Project

ECS Project Training Material Volume 9: Data Distribution

March 1999

Raytheon Systems Company
Upper Marlboro, Maryland

ECS Project Training Material Volume 9: Data Distribution

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Preface

This document is a contract deliverable with an approval code of 3. As such, it does not require formal Government approval. This document is delivered for information only, but is subject to approval as meeting contractual requirements.

Any questions should be addressed to:

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Abstract

This is Volume 9 of a series of lessons containing the training material for Release 4 of the Earth Observing System Data and Information System (EOSDIS) Core System (ECS). This lesson provides a detailed description of the process required for data distribution.

Keywords: training, instructional design, course objective, distribution, data distribution

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Introduction

Identification

Training Material Volume 9 is part of Contract Data Requirements List (CDRL) Item 129, whose requirements are specified in Data Item Description (DID) 625/OP3 and is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Core System (ECS), Contract (NAS5-6000).

Scope

Training Material Volume 9 describes the process and procedures for data distribution. This lesson is designed to provide the operations staff with sufficient knowledge and information to satisfy all lesson objectives.

Purpose

The purpose of this Student Guide is to provide a detailed course of instruction that forms the basis for understanding data distribution. Lesson objectives are developed and will be used to guide the flow of instruction for this lesson. The lesson objectives will serve as the basis for verifying that all lesson topics are contained within this Student Guide and slide presentation material.

Status and Schedule

This lesson module provides detailed information about training for Release 4. Subsequent revisions will be submitted as needed.

Organization

This document is organized as follows:

Introduction:	The Introduction presents the document identification, scope, purpose, and organization.
Related Documentation:	Related Documentation identifies parent, applicable and information documents associated with this document.
Student Guide:	The Student Guide identifies the core elements of this lesson. All Lesson Objectives and associated topics are included.
Slide Presentation:	Slide Presentation is reserved for all slides used by the instructor during the presentation of this lesson.

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Related Documentation

Parent Document

The parent document is the document from which this ECS Training Material's scope and content are derived.

423-41-01	Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work
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Applicable Documents

The following documents are referenced within this ECS Training Material, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this document:

420-05-03	Goddard Space Flight Center, Earth Observing System (EOS) Performance Assurance Requirements for the EOSDIS Core System (ECS)
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS)

Information Documents

Information Documents Referenced

The following documents are referenced herein and amplify or clarify the information presented in this document. These documents are not binding on the content of the ECS Training Material.

609-CD-003	Operations Tools Manual for the ECS Project
611-CD-004	Mission Operation Procedures for the ECS Project
535-TIP-CPT-001	Goddard Space Flight Center, Mission Operations and Data Systems Directorate (MO&DSD) Technical Information Program Networks Technical Training Facility, Contractor-Provided Training Specification

Information Documents Not Referenced

The following documents, although not referenced herein and/or not directly applicable, do amplify or clarify the information presented in this document. These documents are not binding on the content of the ECS Training Material.

220-TP-001	Operations Scenarios - ECS Release B.0 Impacts, Technical Paper for the ECS Project
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305-CD-020	Release B SDPS/CSMS System Design Specification Overview for the ECS Project
305-CD-021	Release B SDPS Client Subsystem Design Specification for the ECS Project
305-CD-022	Release B SDPS Interoperability Subsystem Design Specification for the ECS Project
305-CD-023	Release B SDPS Data Management Subsystem Design Specification for the ECS Project
305-CD-024	Release B SDPS Data Server Subsystem Design Specification for the ECS Project
305-CD-025	Release B SDPS Ingest Subsystem Design Specification for the ECS Project
305-CD-026	Release B SDPS Planning Subsystem Design Specification for the ECS Project
305-CD-027	Release B SDPS Data Processing Subsystem Design Specification for the ECS Project
305-CD-028	Release B CSMS Communications Subsystem Design Specification for the ECS Project
305-CD-029	Release B CSMS System Management Subsystem Design Specification for the ECS Project
305-CD-030	Release B GSFC DAAC Design Specification for the ECS Project
305-CD-031	Release B Langley DAAC Design Specification for the ECS Project
305-CD-033	Release B EDC DAAC Design Specification for the ECS Project
305-CD-034	Release B ASF DAAC Design Specification for the ECS Project
305-CD-035	Release B NSIDC DAAC Design Specification for the ECS Project
305-CD-036	Release B JPL PO.DAAC Design Specification for the ECS Project
305-CD-037	Release B ORNL DAAC Design Specification for the ECS Project
305-CD-038	Release B System Monitoring and Coordination Center Design Specification for the ECS Project
305-CD-039	Release B Data Dictionary Subsystem Design Specification for the ECS Project
601-CD-001	Maintenance and Operations Management Plan for the ECS Project
604-CD-001	Operations Concept for the ECS Project: Part 1-- ECS Overview
604-CD-002	Operations Concept for the ECS Project: Part 2B -- ECS Release B

605-CD-002	Release B SDPS/CSMS Operations Scenarios for the ECS Project
607-CD-001	ECS Maintenance and Operations Position Descriptions
500-1002	Goddard Space Flight Center, Network and Mission Operations Support (NMOS) Certification Program, 1/90

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Data Distribution Overview

Lesson Overview

This lesson will provide you with the complete process by which the ECS personnel perform data distribution. The processes described in the lesson apply to Ingest/Distribution Technicians. The procedures involved in data distribution include such tasks as monitoring data distribution requests; changing the priority of a distribution request; canceling, suspending and/or resuming a distribution request; or unloading/loading tape stackers.

Lesson Objectives

Overall Objective - The overall objective of the Data Distribution lesson is for Maintenance and Operations (M&O) personnel to develop proficiency in the procedures that apply to data distribution operations for the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS).

Condition - The student will be given oral or written information and requirements for performing data distribution activities, access to the Data Server Subsystem, a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform data distribution activities in accordance with the prescribed procedures without error.

Specific Objective 1 - The student will describe the general functions and processes associated with data distribution (in the context of ECS operations).

Condition - The student will be given written or oral questions concerning the general functions and processes associated with data distribution.

Standard - The student will state without error the general functions and processes associated with data distribution in accordance with the lesson content and the applicable procedures.

Specific Objective 2 - The student will perform the steps involved in launching the data distribution graphical user interface (GUI) and the storage management GUI.

Condition - The student will be given a statement of the requirements for launching the data distribution and storage management GUIs, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in launching the data distribution and storage management GUIs in accordance with the applicable procedure.

Specific Objective 3 - The student will perform the steps involved in monitoring/controlling data distribution requests, including configuring data distribution polling, filtering data distribution requests, changing the priority of distribution requests, suspending/resuming distribution requests, and canceling distribution requests.

Condition - The student will be given a statement of the requirements for monitoring/controlling data distribution requests, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in monitoring/controlling data distribution requests in accordance with the applicable procedures.

Specific Objective 4 - The student will perform the steps involved in setting up the 8mm stackers for data distribution purposes.

Condition - The student will be given a statement of the requirements for setting up the 8mm stackers for data distribution purposes, access to the Data Server Subsystem (including the 8mm tape stacker(s)), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in setting up the 8mm stackers for data distribution purposes in accordance with the applicable procedures.

Specific Objective 5 - The student will perform the steps involved in unloading and loading 8mm tape cartridges for data distribution purposes.

Condition - The student will be given a statement of the requirements for unloading and loading 8mm tape cartridges for data distribution purposes, access to the Data Server Subsystem (including the 8mm tape stacker(s)), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in unloading and loading 8mm tape cartridges for data distribution purposes in accordance with the applicable procedures.

Specific Objective 6 - The student will perform the steps involved in printing labels for 8mm tape cartridges.

Condition - The student will be given a statement of the requirements for printing labels for 8mm tape cartridges, access to the applicable personal computer (PC) and label printer, a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in printing labels for 8mm tape cartridges in accordance with the applicable procedures.

Specific Objective 7 - The student will perform the steps involved in processing 8mm tapes for shipment.

Condition - The student will be given a statement of the requirements for processing 8mm tapes for shipment, access to the Data Server Subsystem (including the 8mm tape stacker(s)), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in processing 8mm tapes for shipment in accordance with the applicable procedures.

Specific Objective 8 - The student will perform the steps involved in troubleshooting data distribution problems.

Condition - The student will be given a statement of the requirements for troubleshooting data distribution problems, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in troubleshooting data distribution problems in accordance with the applicable procedures.

Importance

This lesson applies to students who will be Distributed Active Archive Center (DAAC) Ingest/Distribution Technicians. The lesson will provide them with the knowledge and skills needed when performing their assigned tasks. Those tasks include monitoring data pull, push, and hard media distribution operations; changing the priority of distribution requests; suspending/resuming distribution requests; canceling distribution requests; and unloading/loading 8mm tape cartridges for data distribution purposes. The lesson describes why and how the activities are performed. Consequently, the students will become aware of what tasks they will be performing on the job and how to accomplish those tasks.

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Distribution Concepts

ECS Context

Data distribution for ECS is accomplished at the Distributed Active Archive Centers (DAACs). The people involved in data distribution activities are Ingest/Distribution Technicians.

The ECS Context Diagram (Figure 1) shows the relationships among subsystems within the Science Data Processing component of ECS. The Data Server Subsystem (DSS), which manages access to the data archive, is key to data distribution as well as several other functions. Of course, the context diagram shows a generalized (high-level) view of ECS. The Data Distribution (DDIST), Storage Management (STMGT), and Science Data Server (SDSRV) architecture diagrams (Figures 2 through 4 respectively) focus on the individual computer software configuration items (CSCIs) of the Data Server Subsystem and their relationships with each other and with other subsystems.

- DDIST (Figure 2) formats and distributes data to users, either electronically or on physical media (i.e., 8mm tape cartridges).
- STMGT (Figure 3) stores, manages, and retrieves data files on behalf of other science data processing components.
- SDSRV (Figure 4) manages and provides user access to collections of non-document earth science data.

Data Distribution (DDIST)

The DDIST CSCI is the part of ECS Science Data Processing that the Ingest/Distribution Technician uses when monitoring the distribution of data products. The Ingest/Distribution technician has access to DDIST primarily through the Data Distribution Operator graphical user interface (GUI).

DDIST has the following three major components (as shown in Figure 2):

- Data Distribution GUI (EcDsDdistGui).
 - GUI that allows the technician to track and manipulate distribution requests through GUI controls and database information.
- Distribution Server (EcDsDistributionServer).
 - Server that provides the control and coordination for data distribution through request processing.

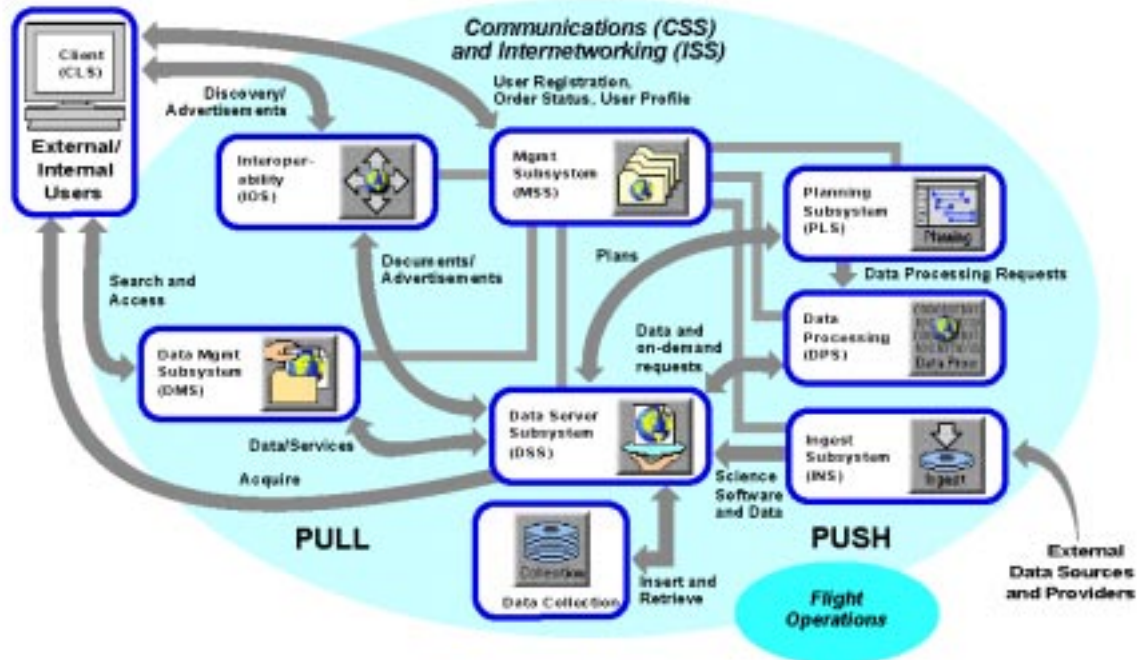


Figure 1. ECS Context Diagram

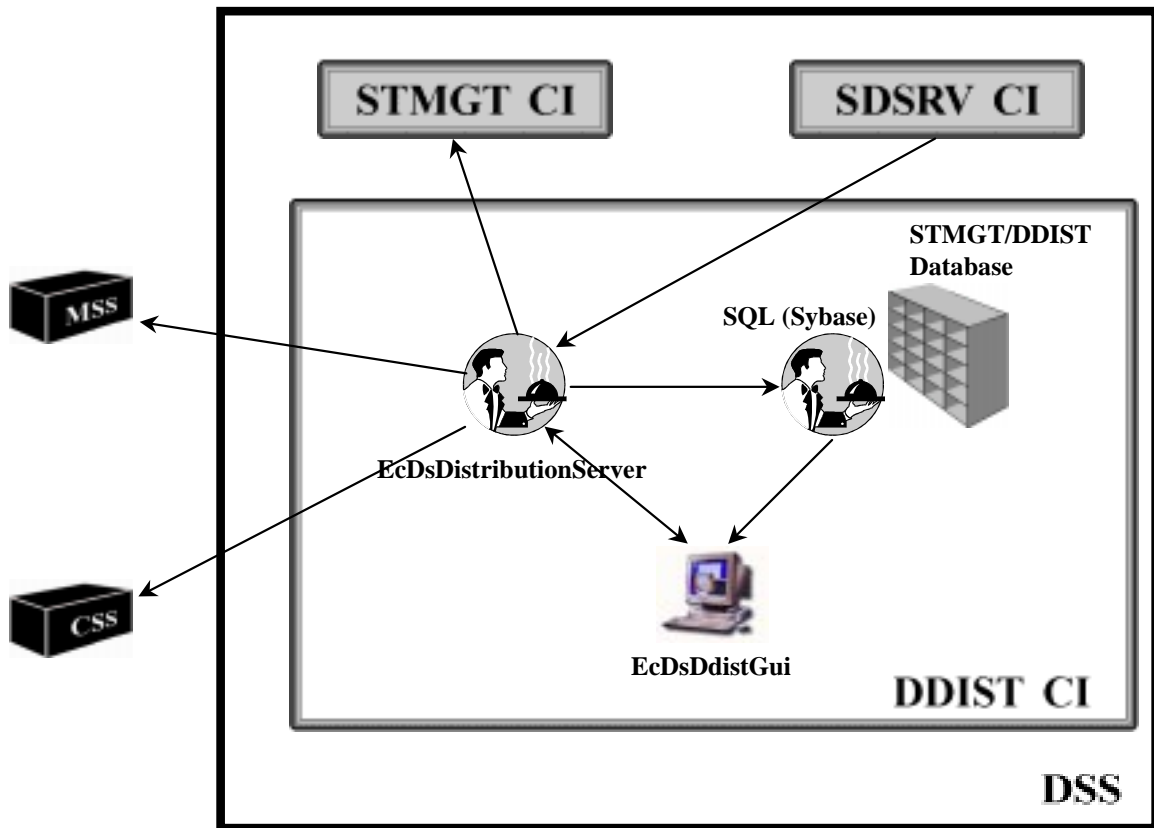


Figure 2. Data Distribution (DDIST) CSCI Architecture

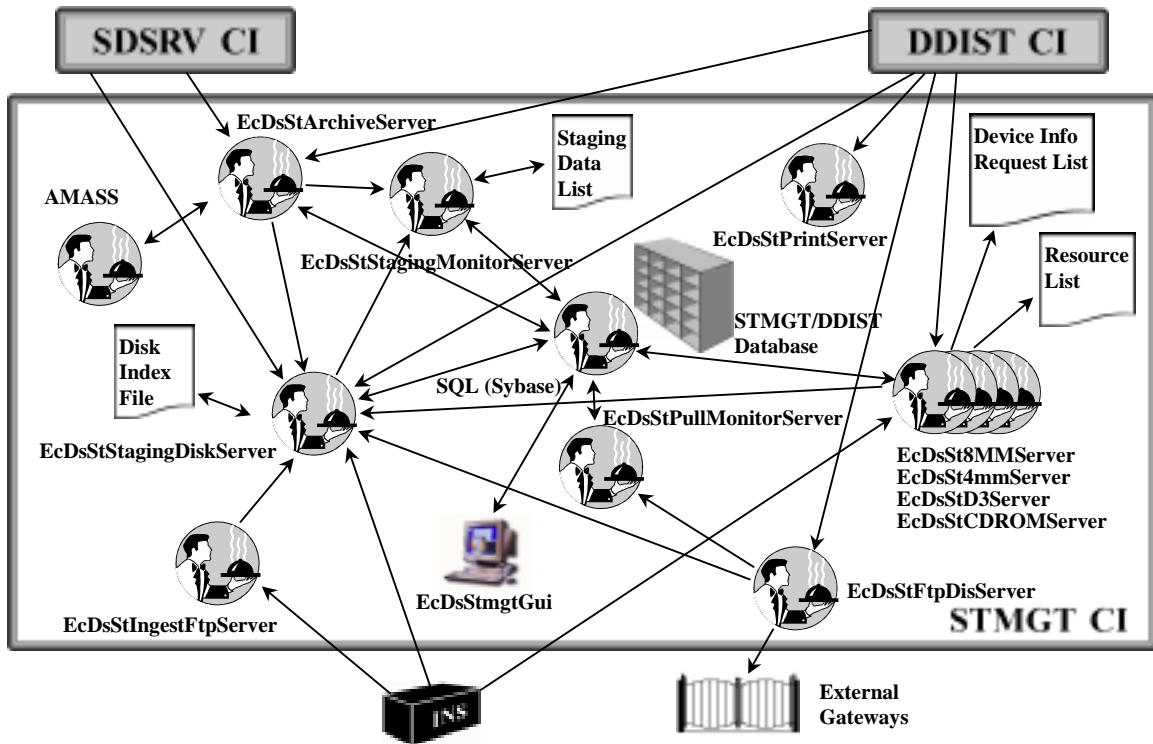


Figure 3. Storage Management (STMGT) CSCI Architecture

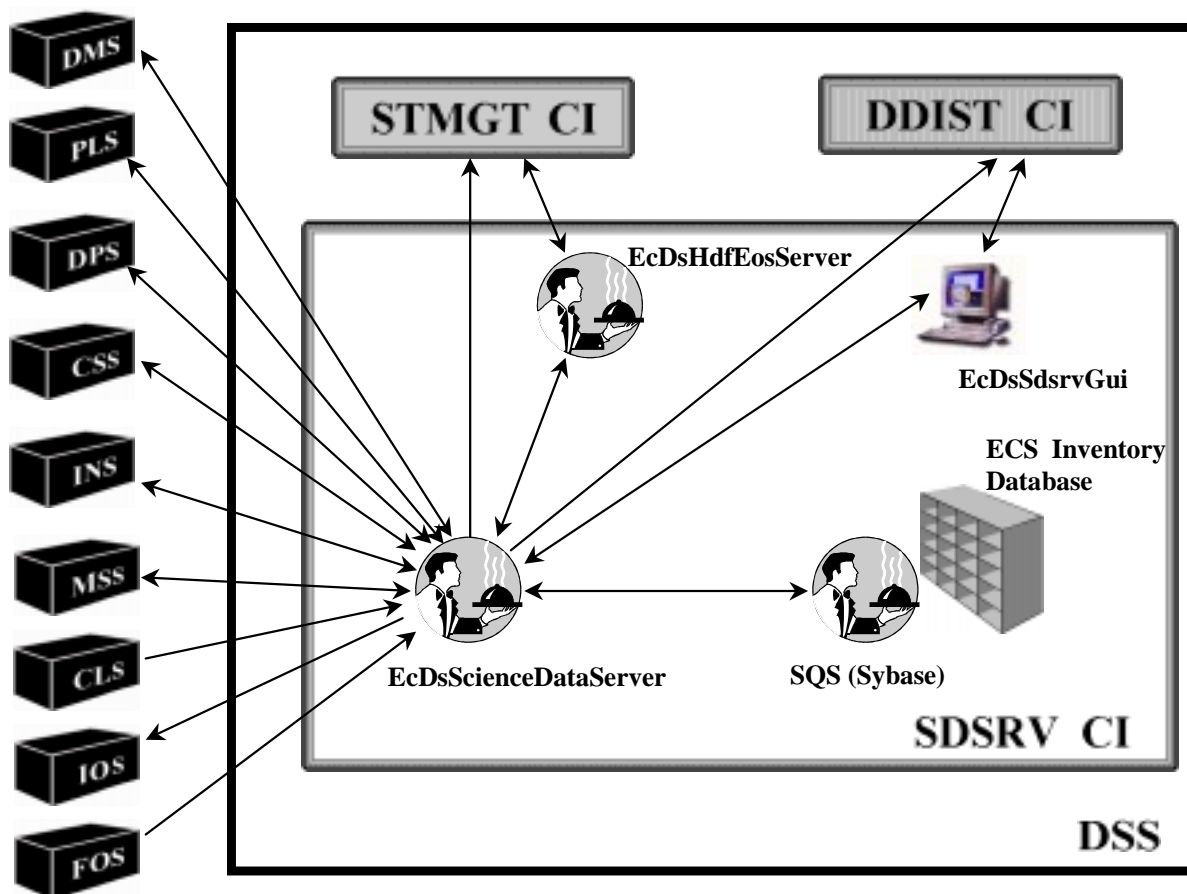


Figure 4. Science Data Server (SDSRV) CSCI Architecture

- Sybase Structured Query Language (SQL) Server.
 - Commercial off-the-shelf (COTS) software application that handles the request list and has a set of stored procedures that updates the request configuration, provides the request configuration to GUI operations and check-points the state of the CSCI for fault recovery purposes.

Storage Management (STMGT)

The STMGT CSCI manages all physical storage resources for all DSS components including the following items:

- Tape robotic archive.
- Random Array of Inexpensive Disks (RAID) disk cache.
- On-line storage.
- Peripheral devices (e.g., various types of magnetic tape drives) used for ingesting and distributing data.

During the distribution of data, STMGT provides SDSRV and DDIST with interfaces that copy files out of the archive and allocate magnetic disk space for staging the files. In addition, STMGT provides DDIST with interfaces that either allocate peripheral devices (that are shared with Ingest) for copying files to hard media, or that copy files for electronic distribution. Furthermore, STMGT maintains a user pull area that supports electronic pull distribution.

STMGT has the following major components (as shown in Figure 3):

- Archive Server (EcDsStArchiveServer).
 - Server that provides access to stored data.
 - There can be multiple archive servers running at a given site, each with its own type of data or storage medium.
- Staging Servers.
 - Staging Monitor Server (EcDsStStagingMonitorServer) - Server that manages a group of data files that have been retrieved from the archive and placed into a cache area on staging disk; it maintains a list of the data files so that subsequent data retrieval requests are fulfilled immediately without requiring an additional archive access.
 - Staging Disk Server (EcDsStStagingDiskServer) - Server that manages shared disk space; it allows clients to allocate disk space and reserve files between staging directories and from non-staging to staging directories.
- Resource Managers.
 - 8mm Server (EcDsSt8MMServer) - Server that schedules access to the 8mm cartridge tape drives shared between Ingest and Data Distribution; maintains a request queue based on priority and time of request receipt.
 - D3 Server (EcDsStD3Server) - Server that schedules access to the D3 cartridge tape drive(s); maintains a request queue.
 - Ingest FTP Server (EcDsStIngestFtpServer) - Server that schedules access for Ingest file transfer protocol (ftp); maintains a request queue.
 - FTP Distribution Server (EcDsStFtpDisServer) - Server that schedules access for distribution ftp; maintains a request queue.
 - Print Server (EcDsStPrintServer) - Server that manages printing out packing list files associated with distribution requests.
- Pull Monitor Server (EcDsStPullMonitorServer).

- Server that manages the files in the user pull area; deletes files as they are either retrieved (i.e., electronically pulled) from the user pull area or become stale (when their time-out periods expire).
- Storage Management GUI (EcDsStmgtGui).
 - GUI to the database; allows the technician to set parameters and configurations that control the STMGT servers.
- Sybase SQL Server.
 - COTS software application that handles insertion and retrieval of data concerning storage management activities into/from the STMGT database.
- Archival Management and Storage System (AMASS).
 - COTS software application that supports the functioning of the data repository hardware (e.g., archive robotics).

Science Data Server (SDSRV)

The SDSRV CSCI is the part of ECS Science Data Processing that issues requests to the STMGT and DDIST CSCIs to perform storage and distribution services in support of the processing of service requests, such as insertion of data into the archive or distribution of data products to requesters (including other ECS subsystems). The Ingest/Distribution technician has some access to SDSRV (i.e., system request information) through the Data Distribution Operator GUI.

SDSRV has the following major components (as shown in Figure 4):

- Science Data Server (EcDsScienceDataServer).
 - Server responsible for managing collections of Earth Science and related data, and for servicing requests for the storage, search, retrieval, and manipulation of data within those collections.
- Hierarchical Data Format (HDF) EOS Server (EcDsHdfEosServer).
 - Server that provides science data subsetting capabilities for Earth Science data that have been configured with a subsetting service.

- Science Data Server GUI (EcDsSdSrvGui).
 - GUI that allows the operator to monitor active EcDsScienceDataServer requests and receive descriptor files and dynamic link libraries (dll) for configuring Earth Science Data Types (ESDTs) in the EcDsScienceDataServer.
- Sybase Spatial Query Server (SQS).
 - COTS software application that provides the ability to store and search spatial metadata in the ECS Inventory and Configuration data store, which contains ESDT configuration information and the data catalog for all the archived products found at the DAAC.

The Data Distribution Process

Data Distribution is a process of retrieving archived data and providing the data to requesters in response to the orders they submit. The requesters may be classified in either of the following two categories:

- External to ECS.
 - For example, scientists at Science Computing Facilities (SCFs) may have standing orders for the data products that are processed using their science software.
- Internal to ECS.
 - For example, the Data Processing Subsystem depends on Data Distribution to distribute copies of archived science software and input data in support of data processing.

Currently, data retrieved from the archives can be distributed to requesters using any of the following three general methods:

- Electronic pull.
- Electronic push.
- Hard (physical) media distribution on 8mm tape cartridges.

The method of data distribution is dictated by the nature of the data distribution request. (The requester specifies the distribution method when ordering the data.)

If the requester specifies distribution in the electronic “pull” mode, data are retrieved from the archive and placed in the “pull area” on the data server staging disk. The requester is notified that the data are available for retrieval from that particular location for a set period of time. The requester initiates a file transfer procedure (ftp “get”) to move the data electronically (over a communications network) to the requester’s own system.

In response to a request for distribution in the electronic “push” mode, data are retrieved from the archive and placed on a data server staging disk. Then the retrieved data on the staging disk are transferred electronically (via ftp “put”) to the requester’s designated storage location (specified in the distribution request) under the control of the data server. The requester is notified when the data push has been completed.

If the requester submits a request for hard media distribution, the retrieved data on the staging disk are transferred to a physical medium (i.e., 8mm tape cartridge). Then the DAAC

Ingest/Distribution Technician has the hard media product packaged and shipped to the requester.

In general, data distribution operations proceed as follows:

- **Electronic Pull:**
 - A requester connects to the system and performs a search [e.g., using the B0 Search and Order Tool (B0SOT)] for a specific data product.
 - When the system notifies the requester that the product has been found, the requester submits an order for a “pull” of the data using ftp.
 - A subscription is entered (through the subscription server) for e-mail notification to the requester when the requested data have been staged to the Data Server pull disk.
 - STMGT retrieves the data from the archive and places the data on the Data Server pull disk.
 - The subscription server notifies the requester (via e-mail) that the data are available for retrieval for a set period of time (established by DAAC policy). The notification provides the requester with the necessary path and file-naming information to allow retrieval of the data from the Data Server pull disk.
 - The requester pulls (transfers) the data from the Data Server pull disk to the requester’s own system.
 - The data are deleted from the pull disk in accordance with DAAC policy (usually after a set period of time).
- **Electronic Push:**
 - A requester connects to the system and performs a search for a specific data product.
 - When the system notifies the requester that the product has been found, the requester submits an order for an ftp push of the data. The requester supplies all the necessary system, path, and security information to enable the requested data to be placed in a directory on the requester's system.
 - A subscription is entered (through the subscription server) for e-mail notification to the requester when the requested data have been distributed via ftp push.
 - The data are retrieved from the archive, placed on the Data Server staging disk and pushed (transferred) to the requester's system.
 - The subscription server notifies the requester (via e-mail) that the data push has been completed.
 - The data are deleted from the staging disk in accordance with DAAC policy (e.g., after a set period of time).
- **Physical Media Distribution:**
 - A requester connects to the system and performs a search for a specific data product.
 - The requester submits an order for a shipment of specific data on 8mm tape cartridge. The distribution request specifies the necessary UNIX data format, compression method (if any), and media form factor required.

- A subscription is entered (through the subscription server) for e-mail notification to the requester when the requested data have been shipped.
- The data are retrieved from the archive and placed on the appropriate volume of a Data Server staging disk.
- The DAAC Ingest/Distribution Technician will have loaded the 8mm tape drive and indicated to the system that the drive is ready for data transfer.
- The data are transferred to an 8mm tape cartridge. The packing list is generated automatically when the Ingest/Distribution Technician notifies the system to mark the request “shipped.”
- The Ingest/Distribution Technician has the tape cartridge packaged and shipped to the requester.
- The subscription server notifies the requester (via e-mail) that the request has been completed.
- The data are deleted from the staging disk in accordance with DAAC policy.

Launching the Data Distribution and Storage Management GUIs

Launching the Data Distribution and Storage Management GUIs

The following software applications are associated with Data Distribution:

- Data Distribution Operator GUI (EcDsDdistGui).
- Distribution Server (EcDsDistributionServer).
- Sybase SQL Server.

In addition, Data Distribution depends on a number of related servers, especially the Science Data Server and Storage Management servers, to participate in the distribution of data from the archive.

The following software applications are associated with Storage Management:

- Storage Management Control GUI (EcDsStmgtGui).
- Archive Server (EcDsStArchiveServer).
- Staging Monitor Server (EcDsStStagingMonitorServer).
- Staging Disk Server (EcDsStStagingDiskServer).
- 8mm Server (EcDsSt8MMServer).
- D3 Server (EcDsStD3Server).
- Ingest FTP Server (EcDsStIngestFtpServer).
- FTP Distribution Server (EcDsStFtpDisServer).
- Print Server (EcDsStPrintServer).
- Pull Monitor Server (EcDsStPullMonitorServer).
- Sybase SQL Server.
- Archival Management and Storage System (AMASS).

It is expected that eventually the ECS DAAC desktop will be configured to allow access to the Data Distribution Operator GUI and Storage Management Control GUI using icons. In the interim, access to the GUIs must be gained through the use of UNIX commands.

Launching the Data Distribution and Storage Management GUIs starts with the assumption that the applicable servers are running and the Ingest/Distribution Technician has logged in to the ECS system.

Launching the Data Distribution and Storage Management GUIs

NOTE: Commands in Steps 1 through 9 are typed at a UNIX system prompt.

- 1** At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.
 - ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.

- The use of **xhost +** is discouraged because of a potential security problem.
- 2 Type **setenv DISPLAY *clientname*:0.0** then press the **Return/Enter** key.
- Use either the X terminal/workstation IP address or the machine-name for the *clientname*.
 - When using secure shell, the DISPLAY variable is set just once, before logging in to remote hosts. If it were to be reset after logging in to a remote host, the security features would be compromised.
- 3 Open another UNIX (terminal) window.
- 4 Start the log-in to the Distribution Server host by typing **/tools/bin/ssh *hostname*** (e.g., **e0dis02**, **g0dis02**, **l0dis02**, or **n0dis02**) in the new window then press the **Return/Enter** key.
- If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone will not work).
 - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 5.
 - If you have not previously set up a secure shell passphrase; go to Step 6.
- 5 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your *Passphrase* then press the **Return/Enter** key.
- Go to Step 7.
- 6 At the **<user@remotehost>'s password:** prompt type your *Password* then press the **Return/Enter** key.
- 7 Type **cd /usr/ecs/MODE/CUSTOM/utilities** then press **Return/Enter**.
- Change directory to the directory containing the Data Distribution Operator GUI and Storage Management Control GUI start-up scripts (e.g., **EcDsDdistGuiStart**, **EcDsStmgtGuiStart**).
 - The *MODE* will most likely be one of the following operating modes:
 - OPS (for normal operation).
 - TS1 (for SSI&T).
 - TS2 (new version checkout).
 - Note that the separate subdirectories under **/usr/ecs** apply to different operating modes.
- 8 Type **EcDsDdistGuiStart *MODE*** then press **Return/Enter**.
- The **Data Distribution Operator GUI Distrib'n Requests** tab (Figure 5) is displayed.
- 9 Type **EcDsStmgtGuiStart *MODE*** then press **Return/Enter**.
- The **Storage Management Control GUI Storage Config.** tab (Figure 6) is displayed.
-

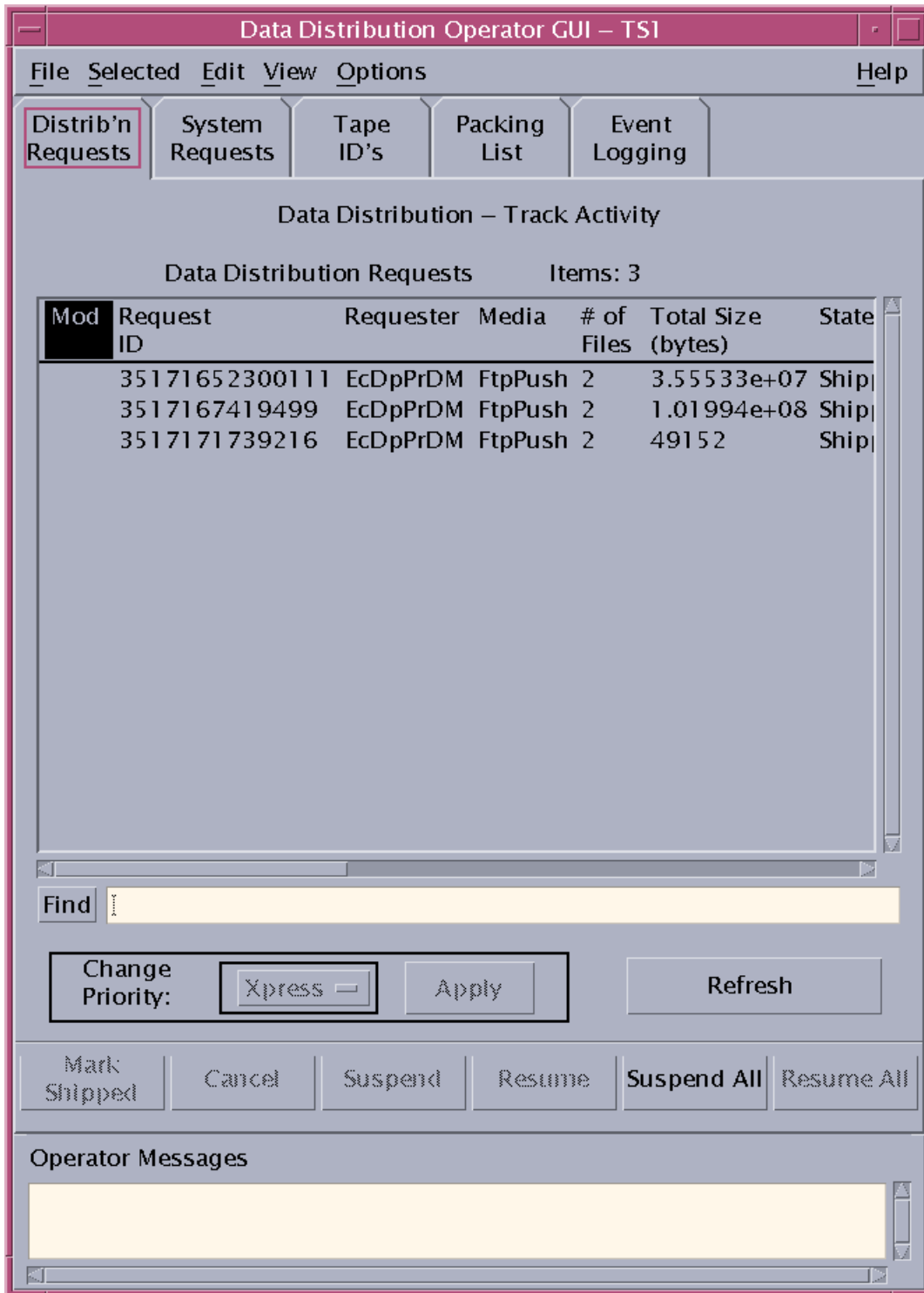


Figure 5. Data Distribution Operator GUI: Distrib'n Requests Tab

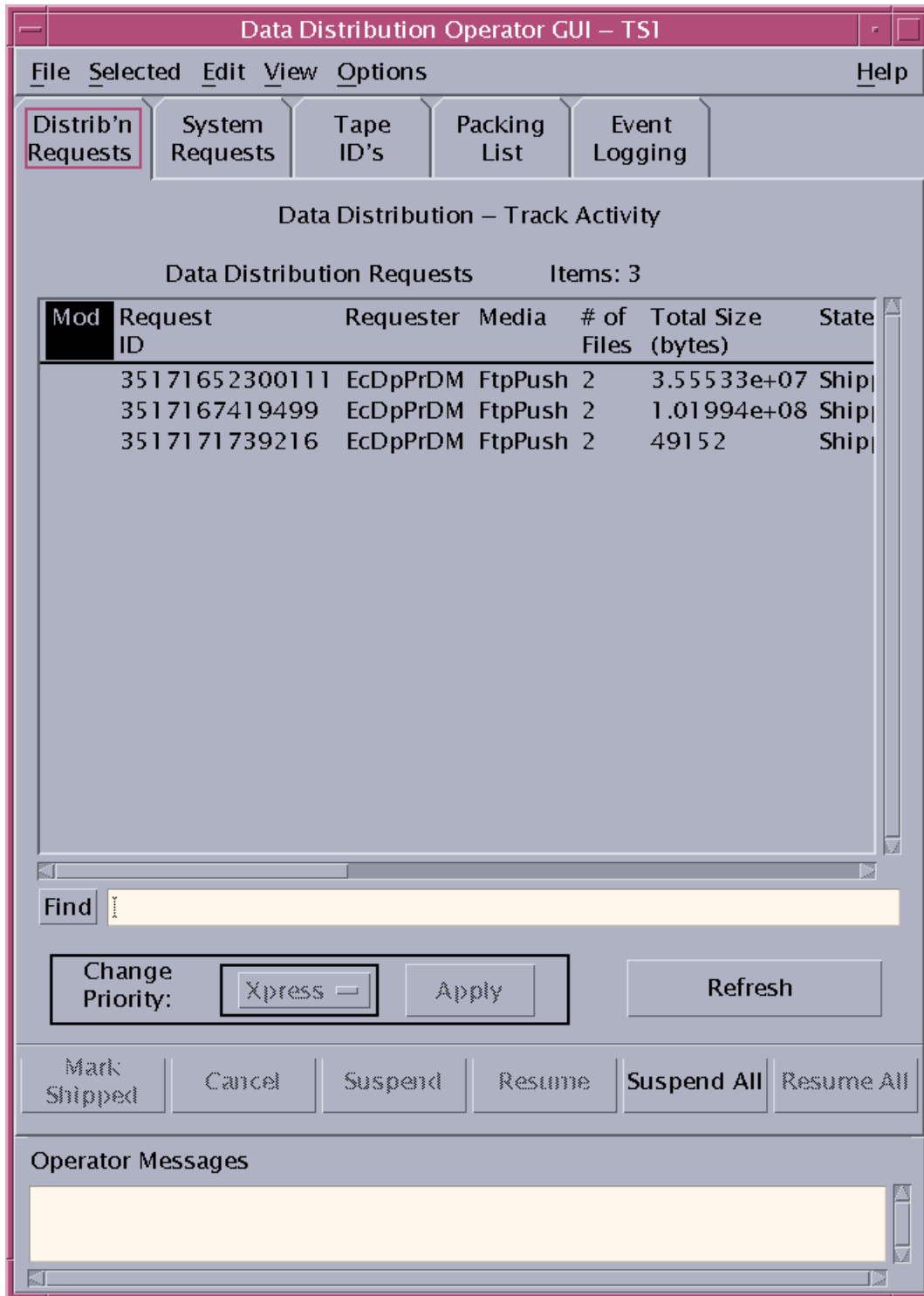


Figure 6. Storage Management Control GUI: Storage Config. Tab

Monitoring/Controlling Distribution Requests

Monitoring/Controlling Data Distribution Requests

Data Distribution activities are monitored and controlled using the **Data Distribution Operator GUI**. The GUI has the following five tabs:

- **Distrib'n Requests** [Distribution Requests].
- **System Requests**.
- **Tape ID's**.
- **Packing List**.
- **Event Logging**.

The Ingest/Distribution Technician monitors and manages data distribution requests primarily via the **Data Distribution - Track Activity** window of the **Distrib'n Requests** tab (Figure 5). From the **Data Distribution - Track Activity** window the DAAC Ingest/Distribution Technician can perform the following functions:

- View data distribution requests.
- Change the priority of a selected distribution request.
- Cancel or suspend a request.
- Resume processing of a suspended request.
- Filter on all or specific requests by...
 - Request ID.
 - Requester.
 - All Requests.
 - Media Type.
 - State (current status).

The **Data Distribution - Track Activity** window displays the following information for each data distribution request:

- Mod [contains a check mark if the request has been selected/modified (e.g., suspended) by the operator during the current session].
- Request ID.
- Requester.
- Media [type].
- # of Files.
- Total Size [of the request] (bytes).
- State [current state of the request]
- Ordered State [the next state that the request should have]
- Priority.
- Submission Time.
- End Time

- # Media.
- # Granules.
- Media # Completed.
- ESDT.
- Order ID.
- Warm Start [is the request a recovered request? (true/false)].

The procedure for monitoring data distribution requests starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Distrib'n Requests** screen (Figure 5) is being displayed.

Monitoring/Controlling Data Distribution Requests

- 1 Configure polling as described in the procedure for **Configuring Data Distribution Polling** (subsequent section of this lesson).
- 2 Observe information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI**.
 - By default all current distribution requests are shown in the **Data Distribution Requests** list of the **Data Distribution - Track Activity** window (**Distrib'n Requests** tab).
 - Note that virtually all data retrieved from the archive is controlled by Data Distribution; consequently there may be a lot of activity on the **Data Distribution - Track Activity** screen, especially if data processing is operating at or near capacity.
 - Consequently, it may be useful to restrict the number of distribution requests displayed by filtering them as described in the next step of this procedure.
 - Horizontal and vertical scroll bars allow viewing data that are not readily visible in the window.
 - The **Refresh** button provides a means of updating the data on the screen.
 - The **Find** button provides a means of performing a keyword search of the distribution requests.
 - Selecting **Options → Verify Connection** from the pull-down menu allows the operator to check the status of the connection to the server.
 - The status is displayed in the **Operator Messages** field at the bottom of the GUI.
 - The **Operator Messages** field at the bottom of the GUI displays messages concerning events occurring in distribution operations.
- 3 If the list of data distribution requests shown in the **Data Distribution - Track Activity** window needs to be filtered, perform the procedure for **Filtering Data Distribution Requests** (subsequent section of this lesson).
- 4 Observe data distribution requests displayed in the **Data Distribution Requests** list.
- 5 If it becomes necessary to change the priority of a data distribution request, perform the procedure for **Changing the Priority of Data Distribution Requests** (subsequent section of this lesson).

- 6 If it becomes necessary to either suspend a data distribution request or resume processing of a suspended request, perform the procedure for **Suspending/Resuming Data Distribution Requests** (subsequent section of this lesson).
 - 7 If it becomes necessary to cancel a data distribution request, perform the procedure for **Canceling Data Distribution Requests** (subsequent section of this lesson).
 - 8 If a hard medium (8mm) distribution has a status of “Waiting for Shipment” displayed in the **State** column of the **Data Distribution Requests** list, perform the procedure for **Processing 8mm Tapes for Shipment** (subsequent section of this lesson).
 - 9 Repeat Steps 3 through 8 as necessary to monitor data distribution requests.
 - 10 If it becomes necessary to exit from the **Data Distribution Operator GUI** select **File → Exit** from the pull-down menu.
-

Configuring Data Distribution Polling

The **Data Distribution Operator GUI Options** menu provides the Ingest/Distribution Technician with a means of switching the Data Distribution database polling function on or off. In addition, there are two parameters that the technician can modify:

- DDist Polling Rate
 - How often (in seconds) the system updates the information displayed in the **Data Distribution - Track Activity** window.
- Error Retry Rate
 - Amount of time (in seconds) that the system waits before trying to poll the Data Server after a failed attempt.
 - The “error retry rate” parameter is not supported in Drop 4.

The procedure for configuring data distribution polling starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib’n Requests** tab is being displayed.

Configuring Data Distribution Polling

- 1 Select **Options → System Settings** from the pull-down menu.
 - The **Refresh Options** dialog box (Figure 7) is displayed.

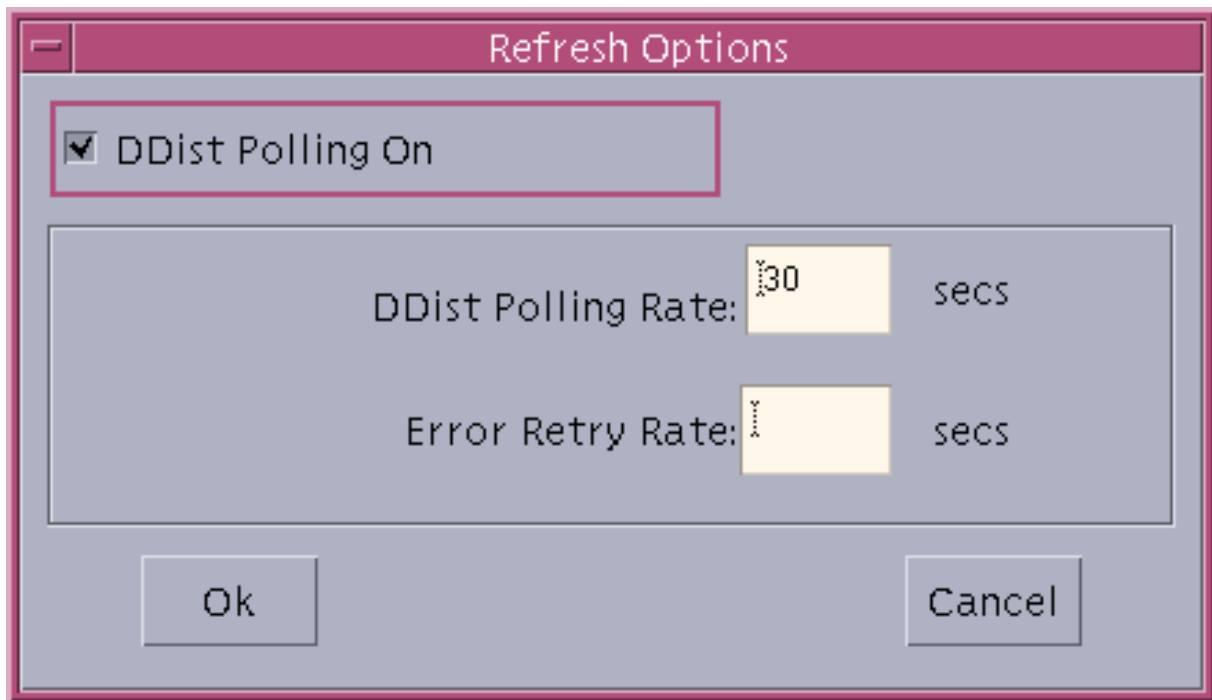


Figure 7. Refresh Options Dialog Box

- 2 To change the DDist Polling state (from off to on or vice versa), click on the **DDist Polling On** button.
 - If the button does not have a check mark in it, clicking on it turns DDist Polling on.
 - If the button already has a check mark in it, clicking on it turns DDist Polling off.
 - 3 To change the polling rate, type the desired value (in seconds) in the **DDist Polling Rate** field.
 - The default value is 30 seconds.
- NOTE:** **Error Retry Rate** is not supported in Drop 4.
- 4 When the appropriate data have been entered in the **Refresh Options** dialog box fields, click on the appropriate button:
 - **Ok** - to apply the selections and dismiss the **Refresh Options** dialog box.
 - **Cancel** - to dismiss the **Refresh Options** dialog box without applying the selections.
 - 5 Return to the procedure for Monitoring/Controlling Data Distribution Requests.

Filtering Data Distribution Requests

The distribution requests to be displayed in the **Data Distribution Requests** list (**Data Distribution - Track Activity** window shown in Figure 5) can be filtered using the **Distribution Filter Requests** dialog box. The filtering can be done on the basis of the following criteria, either individually or in combination:

- Request ID.
- Requester.
- Media Type.
- State [of the request].

The procedure for filtering data distribution requests starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Filtering Data Distribution Requests

- 1 Select **View → Filter** from the pull-down menu.
 - The **Distribution Filter Requests** dialog box (Figure 8) is displayed.
 - Perform as many of the following steps as necessary depending on the criteria for filtering distribution requests:
 - Request ID - Step 2.
 - Requester - Step 3.
 - All Requests - Step 4.
 - Media Type - Step 5.
 - State - Step 6.
- 2 If a specific distribution request is desired and the request ID is known, first click on the **Request ID** radio button, then click in the adjacent text box and type the request ID.
- 3 If data distribution requests submitted by a particular requester are desired, first click on the **Requester** radio button, then click in the adjacent text box and type the requester's identification.
 - In the text box the requester must be identified exactly as known to the Data Server Subsystem.
- 4 If all data distribution requests are to be displayed in the **Data Distribution Requests** list, click on the **All Requests** radio button and go to Step 7.
 - The **All Requests** button is particularly useful for restoring the **Data Distribution Requests** list after reviewing a previously filtered set of requests.
- 5 If a list of data distribution requests filtered by media type(s) is needed, click on the applicable button(s) in the **Media Type** section of the **Filter Requests** dialog box.
 - Radio buttons corresponding to the following types of media are available:
 - **CD-ROM** (Not currently implemented.).
 - **9-Track** (tape) (Not currently implemented).
 - **8 mm** (tape).
 - **4 mm** (tape) (Not currently implemented).
 - **Electronic Push.**
 - **Electronic Pull.**

Distribution Filter Requests

☐ Request ID

☐ Requester

☐ All Requests

Media Type:

☐ CD-ROM
 ☐ Electronic Push

☐ 9-Track
 ☐ Electronic Pull

☐ 8 mm

☐ 4 mm

State:

☐ Pending
 ☐ Suspended

☐ Active
 ☐ Suspended with Errors

☐ Staging
 ☐ Waiting for Shipment

☐ Transferring
 ☐ Shipped

☐ Cancelled

Figure 8. Distribution Filter Requests Dialog Box

- In addition, the following media selections are available:
 - **All.**
 - **None.**
 - If other filters (e.g., requester or state) are to be applied, the **Apply** button may be clicked to implement the media type filter and leave the **Filter Requests** dialog box open.
- 6** If a list of data distribution requests filtered by state(s) is needed, click on the applicable button(s) in the **State** section of the **Filter Requests** dialog box.
- Radio buttons corresponding to the following states are available:
 - **Pending.**
 - **Active.**
 - **Staging.**
 - **Transferring.**
 - **Cancelled.**
 - **Suspended.**
 - **Suspended with Errors.**
 - **Waiting for Shipment.**
 - **Shipped.**
 - In addition, the following state selections are available:
 - **All.**
 - **None.**
 - If other filters (e.g., requester or media type) are to be applied, the **Apply** button may be clicked to implement the state filter and leave the **Filter Requests** dialog box open.
- 7** When all filter criteria have been selected, click on the appropriate button:
- **OK** - to implement the selections and dismiss the **Distribution Filter Requests** dialog box.
 - The **Data Distribution - Track Activity** window (Figure 5) reappears; only requests that meet the specified filter criteria appear in the list.
 - **Apply** - to implement the selections without dismissing the **Distribution Filter Requests** dialog box.
 - The **Distribution Filter Requests** dialog box remains open.
 - **Cancel** - to dismiss the **Distribution Filter Requests** dialog box without implementing the selections.
 - The previously available **Data Distribution Requests** list is shown in the **Data Distribution - Track Activity** window (Figure 5).
- 8** Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.
-

Changing the Priority of Data Distribution Requests

The **Change Priority** area of the **Data Distribution - Track Activity** window (Figure 5) allows the Ingest/Distribution Technician to change the priority of data distribution requests. The procedure for changing the priority of data distribution requests starts with the assumption that

all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Changing the Priority of Data Distribution Requests

- 1 If the list of data distribution requests shown in the **Data Distribution - Track Activity** window needs to be filtered to include the distribution request for which the priority is to be changed, perform the procedure for **Filtering Data Distribution Requests**.
 - 2 Highlight the distribution request to be assigned a different priority by clicking on its entry in the **Data Distribution Requests** list.
- NOTE:** In some variants of Drop 4 it is not possible to change the priority of active distribution requests. The request must be suspended first, then the priority can be changed and request processing can be resumed.
- 3 Click and **hold** the **Change Priority** option button to display a menu of priorities, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
 - The following priority codes are available:
 - **Xpress.**
 - **Vhigh.**
 - **High.**
 - **Normal** [default priority].
 - **Low.**
 - Selected code is displayed on the **Change Priority** option button when the mouse button is released.
 - 4 To implement the priority change click on the **Apply** button to the right of the priority option button.
 - Priority of the request, as displayed in the **Priority** column of the **Data Distribution Requests** list, changes from its original value to the newly selected priority.
 - A check mark is displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the request has been changed.
 - 5 Click on the **Refresh** button to update the data displayed on the screen.
 - 6 Repeat the preceding steps as necessary to change the priority of additional data distribution requests.
 - 7 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.
-

Suspending/Resuming Data Distribution Requests

Under certain circumstances it may be advisable to suspend the processing of a data distribution request and resume it at a later time. For example, if there is a very large request that is taking up resources and causing other requests to back up waiting (especially requests from data processing that must be filled to allow processing to proceed), the processing of that request should be suspended until a time when there is less demand on data distribution.

Use the procedure that follows to suspend and subsequently resume data distribution. The procedure starts with the assumption that all applicable servers and the **Data Distribution**

Operator GUI are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Suspending/Resuming Data Distribution Requests

- 1 If the list of data distribution requests shown in the **Data Distribution - Track Activity** window needs to be filtered to include the distribution request to be suspended or resumed, perform the procedure for **Filtering Data Distribution Requests**.
 - 2 To **suspend** requests, perform Steps 3 through 6; to **resume** suspended requests, go to Step 7.
 - 3 If all requests displayed in the **Data Distribution Requests** list are to be suspended, click on the **Suspend All** button.
 - Status of all requests, as displayed in the **State** column of the **Data Distribution Requests** list, changes from original values to "Suspended."
 - Check marks are displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the requests have been changed.
 - Go to Step 5.
 - 4 If a single request displayed in the **Data Distribution Requests** list is to be suspended, first click on the corresponding row in the **Data Distribution Requests** list to highlight the request, then click on the **Suspend** button.
 - Status of the request, as displayed in the **State** column of the **Data Distribution Requests** list, changes from its original value to "Suspended."
 - A check mark is displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the request has been changed.
 - 5 Click on the **Refresh** button to update the data displayed on the screen.
 - 6 If there are no suspended requests to be resumed at this time, return to the procedure for **Monitoring/Controlling Data Distribution Requests**.
 - 7 If processing of all requests displayed in the **Data Distribution Requests** list is to be resumed, click on the **Resume All** button.
 - Status of all requests, as displayed in the **State** column of the **Data Distribution Requests** list, changes from "Suspended" to whatever states are appropriate for the continuation of request processing (depending on each request's status when it was suspended).
 - Go to Step 9.
 - 8 If processing of a single request displayed in the **Data Distribution Requests** list is to be resumed, first click on the corresponding row in the **Data Distribution Requests** list to highlight the request, then click on the **Resume** button.
 - The selected data distribution request resumes processing.
 - Status of the request, as displayed in the **State** column of the **Data Distribution Requests** list, changes from "Suspended" to whatever state is appropriate for the continuation of request processing (depending on its status when it was suspended).
 - 9 Click on the **Refresh** button to update the data displayed on the screen.
 - 10 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.
-

Canceling Data Distribution Requests

Sometimes it may be necessary to cancel the processing of a data distribution request. The procedure for canceling data distribution request processing starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Canceling Data Distribution Requests

- 1 If the list of data distribution requests shown on the **Data Distribution - Track Activity** window needs to be filtered to include the distribution request to be canceled, perform the procedure for **Filtering Data Distribution Requests**.
 - 2 To cancel a request first click on the corresponding row in the **Data Distribution Requests** list to highlight the desired request.
 - 3 Click on the **Cancel** button near the bottom of the **Distrib'n Requests** tab.
 - The selected data distribution request is canceled.
 - Status of the request, as displayed in the **State** column of the **Data Distribution Requests** list, changes from its original value to "Canceled."
 - A check mark is displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the request has been changed.
 - 4 Click on the **Refresh** button to update the data displayed on the screen.
 - 5 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.
-

Viewing System Requests

The **System Requests** tab (Figure 9) is similar to a tab of the same name that is available on the **Science Dataserver Operator GUI**. It allows the DAAC Ingest/Distribution Technician to view some of the same information concerning distribution requests that is displayed on the **Distrib'n Requests** tab (Figure 5). However, fewer details are presented in the **System Management Requests** window of the **System Requests** tab than are shown on the **Distrib'n Requests** tab. Specifically, the following information concerning each request is displayed on the **System Requests** tab:

- Request ID.
- Requester.
- Component [i.e., Data Distribution, Storage Management, Science Data Server].
- Service Request [e.g., Distribute].
- Status [e.g., Shipped, Suspended].
- Priority [e.g., High, Low].

The procedure for viewing system requests starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Distrib'n Requests** screen (Figure 5) is being displayed.

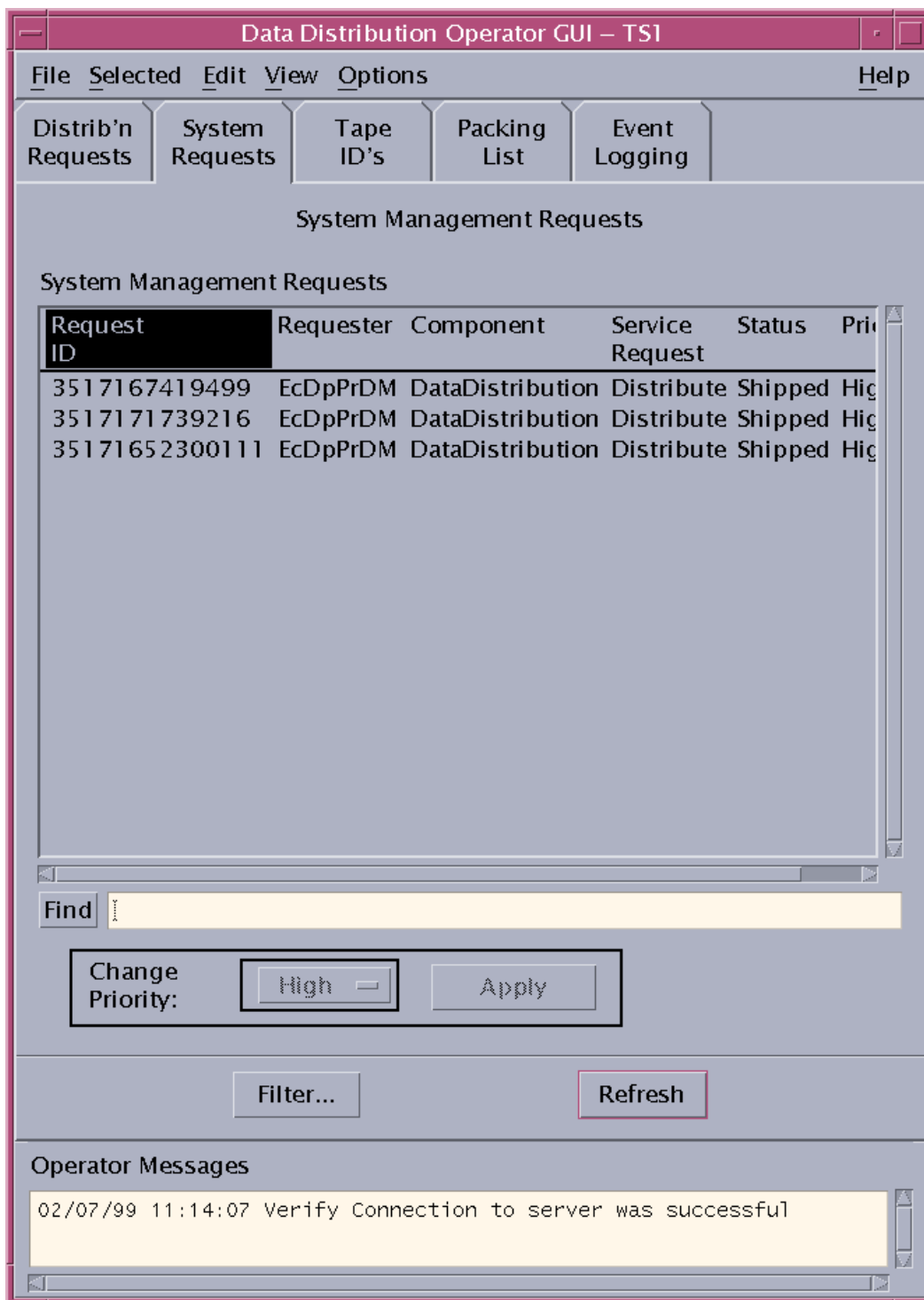


Figure 9. Data Distribution Operator GUI: System Requests Tab

Viewing System Requests

- 1 Click on the **System Requests** tab of the **Data Distribution Operator GUI**.
 - The **System Requests** tab (Figure 9) is displayed.
 - 2 Filter requests as described in the procedure for **Filtering System Requests** (subsequent section of this lesson).
 - 3 Observe information displayed on the **System Requests** tab of the **Data Distribution Operator GUI**.
 - The following information concerning each system request is displayed:
 - Request ID.
 - Requester.
 - Component [e.g., Data Distribution].
 - Service Request [e.g., Distribute].
 - Status [e.g., Shipped, Suspended].
 - Priority [e.g., High, Low].
 - Horizontal and vertical scroll bars allow viewing data that are not readily visible in the window.
 - The **Refresh** button provides a means of updating the data on the screen.
 - The **Find** button provides a means of performing a keyword search of the distribution requests.
 - The **Operator Messages** field at the bottom of the GUI displays messages concerning errors occurring in operations to requests in the **Data Distribution Requests** list of the **Data Distribution - Track Activity** window.
 - 4 If it becomes necessary to exit from the **Data Distribution Operator GUI** select **File → Exit** from the pull-down menu.
-

Filtering System Management Requests

The system requests to be displayed in the **System Management Requests** list (**System Requests** tab, Figure 9) can be filtered using the **System Management Filter Requests** dialog box. The filtering can be done on the basis of the following criteria, either individually or in combination:

- Request ID.
- Requester.
- State [of the request].
- Priority.
- Components.

The procedure for filtering system management requests starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **System Requests** tab is being displayed.

Filtering System Management Requests

- 1 Click on the **Filter...** button near the bottom of the **System Requests** tab.
 - The **System Management Filter Requests** dialog box (Figure 10) is displayed.
 - Perform as many of the following steps as necessary depending on the criteria for filtering distribution requests:
 - Request ID - Step 2.
 - Requester - Step 3.
 - All Requests - Step 4.
 - State - Step 5.
 - Priority - Step 6.
 - Components - Step 7.
- 2 If a specific request is desired and the request ID is known, first click on the **Request ID** radio button, then click in the adjacent text box and type the request ID.
- 3 If requests submitted by a particular requester are desired, first click on the **Requester** radio button, then click in the adjacent text box and type the requester's identification.
 - In the text box the requester must be identified exactly as known to the Data Server Subsystem.
- 4 If all system management requests are to be displayed in the **System Management Requests** list, click on the **All Requests** radio button and go to Step 8.
 - The **All Requests** button is particularly useful for restoring the **System Management Requests** list after reviewing a previously filtered set of requests.

System Management Filter Requests

System Management Filter Requests

☐ Request ID

☐ Requester

☐ All Requests

State:

☐ Queued

☐ Active

☐ Complete

Priority:

☐ High

☐ Normal

☐ Low

Components:

☐ Science Server

☐ Document Server

☐ Storage Management

☐ Distribution

Figure 10. System Management Filter Requests Dialog Box

- 5 If a list of data distribution requests filtered by state(s) is needed, click on the applicable button(s) in the **State** section of the **Filter Requests** dialog box.
- Radio buttons corresponding to the following states are available:
 - **Pending.**
 - **Active.**
 - **Staging.**
 - **Transferring.**
 - **Cancelled.**
 - **Suspended.**
 - **Suspended with Errors.**
 - **Waiting for Shipment.**
 - **Shipped.**
 - In addition, the following state selections are available:
 - **All.**
 - **None.**
 - If other filters (e.g., requester or media type) are to be applied, the **Apply** button may be clicked to implement the state filter and leave the **Filter Requests** dialog box open.
- 6 If a list of system management requests filtered by priority is needed, click on the applicable button(s) in the **Priority** section of the **System Management Filter Requests** dialog box.
- Radio buttons corresponding to the following priorities are available:
 - **High.**
 - **Normal.**
 - **Low.**
 - In addition, the following priority selections are available:
 - **All.**
 - **None.**
 - If other filters (e.g., requester or state) are to be applied, the **Apply** button may be clicked to implement the media type filter and leave the **System Management Filter Requests** dialog box open.
- 7 If a list of system management requests filtered by components is needed, click on the applicable button(s) in the **Components** section of the **System Management Filter Requests** dialog box.
- Radio buttons corresponding to the following priorities are available:
 - **Science Server.**
 - **Document Server [Not Applicable].**
 - **Storage Management.**
 - **Distribution.**
 - In addition, the following priority selections are available:
 - **All.**
 - **None.**

- If other filters (e.g., requester or state) are to be applied, the **Apply** button may be clicked to implement the media type filter and leave the **System Management Filter Requests** dialog box open.
- 8 When all filter criteria have been selected, click on the appropriate button:
- **OK** - to implement the selections and dismiss the **System Management Filter Requests** dialog box.
 - The **System Management Requests** window (Figure 9) reappears; only requests that meet the specified filter criteria appear in the list.
 - **Apply** - to implement the selections without dismissing the **System Management Filter Requests** dialog box.
 - The **System Management Filter Requests** dialog box remains open.
 - **Cancel** - to dismiss the **System Management Filter Requests** dialog box without implementing the selections.
 - The previously available **System Management Requests** list is shown in the **System Management Requests** window (Figure 9).
- 9 Return to the procedure for **Viewing System Requests**.
-

Viewing Event Log Information

In the future the **Event Logging** tab (Figure 11) will provide the Ingest/Distribution Technician with the ability to search the event log and obtain reports on events that would have occurred in data distribution. It will be possible to obtain reports on old distribution requests. (The Distrib'n Requests tab provides information on current and recently completed distribution requests.) It will be possible to review the following information concerning any particular distribution event:

- Number.
- Request ID.
- Date.
- Time.
- Level.
- Type.
- Message.

Data Distribution Operator GUI – TS1

File Selected Edit View Options Help

Distrib'n Requests System Requests Tape ID's Packing List **Event Logging**

Event Log Search Parameters

Date Interval:

Begin / /

End / /

Time Interval:

Begin : :

End : :

Event Type:

Event Level:

Message:

Event Number:

Request ID:

Search Records Found:

Number	Request ID	Date	Time	Level	Type	Message

Operator Messages

02/07/99 11:37:41 Verify Connection to server was successful

Figure 11. Data Distribution Operator GUI: Event Logging Tab

Performing Hard (Physical) Media Operations

Performing Hard (Physical) Media Operations

Media operations currently consist of the following tasks:

- Labeling Tape Cartridges with Bar Codes.
- Setting Up the 8mm Tape Stackers.
- Unloading and Loading Tapes
- Correcting Tape Faults.
- Printing Labels.
- Processing 8mm Tapes for Shipment.
- Performing Quality Control (QC) of Hard Media.
- Packaging Hard Media Products for Shipment.

Processes or procedures for the preceding tasks are provided in the sections that follow.

In the future it will be possible to use the **Data Distribution Operator GUI** for reviewing and/or modifying the text of the preamble to the packing list for any particular type of distribution medium. The **Packing List** tab (Figure 12) will fulfill these functions.

Labeling Tape Cartridges with Bar Codes

Preprinted bar-code labels are purchased for the 8mm tape cartridges. When boxes of new 8mm tapes have been delivered to the distribution area, the Ingest/Distribution Technician removes the tapes from their boxes and affixes a bar-code label to the label area on the edge of each tape.

Setting Up the 8mm Tape Stackers

Setting up the 8mm tape stackers is in part a manual process. It is recommended that the DAAC Ingest/Distribution Technician check the stackers at the beginning of each shift and throughout the day to ensure that tapes are available for the distribution process to fulfill hard media distribution requests.

The procedure that follows involves the use of the Storage Management Control GUI to perform the following activities:

- Define tape groups (by stacker sleeve).
- Record the bar code (Tape ID) of each tape loaded in a particular location in a sleeve.
- Identify the stacker into which each sleeve is loaded.

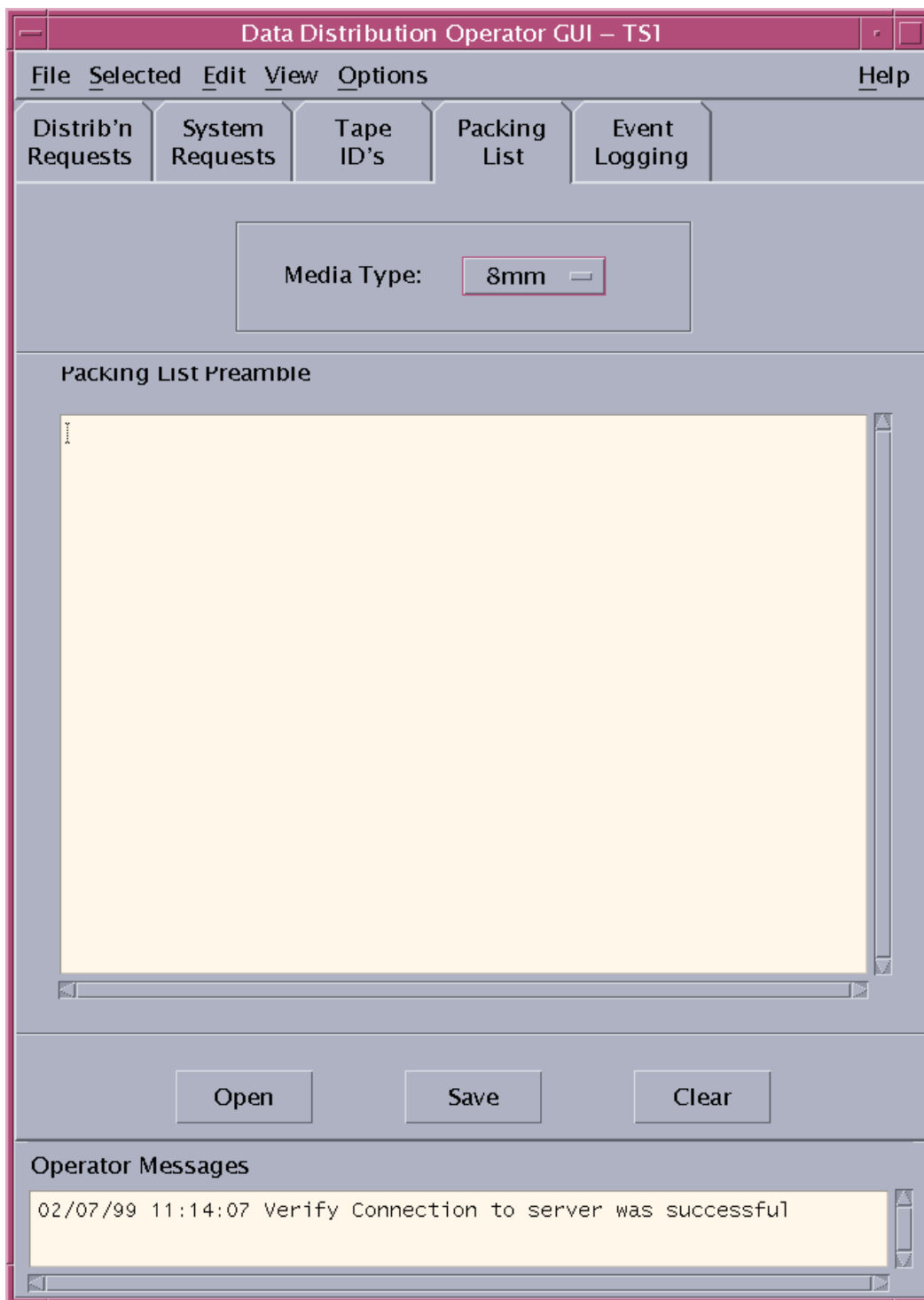


Figure 12. Data Distribution Operator GUI: Packing List Tab

The procedure for setting up the 8mm tape stackers starts with the following assumptions:

- All applicable servers are currently running.
- The **Data Distribution Operator GUI** is running.
 - The **Distrib'n Requests** screen (Figure 5) is being displayed.
- The **Storage Management Control GUI** is running.
 - The **Storage Config.** screen (Figure 6) is being displayed.

Setting Up the 8mm Tape Stackers

- 1 Click on the **Resource Schedule** tab on the **Storage Management Control GUI**.
 - The **Storage Management Control GUI Resource Schedule** tab (Figure 13) is displayed.
- 2 Click on the **Manage Tapes** button on the **Resource Schedule** tab.
 - The **Manage Tape Groups** window (Figure 14) is displayed.
- 3 Click on the **New Tape Group** button in the **Manage Tape Groups** window.
 - The **New Tape Group** window (Figure 15) is displayed.
 - A tape group is typically defined in terms of a stacker sleeve (tape cartridge holder), which holds ten tapes.
 - It may be useful to label the tape stacker sleeve with the name for the tape group.
- 4 Type the following information in the **New Tape Group** window.
 - Name for the new tape group.
 - Number of slots (i.e., **10**).
 - The number of slots entered must agree with the number of slots in the stacker.
 - Type of Media (i.e., **8MM**).
- 5 Click on the **OK** button.
 - The **Manage Tape Groups** window (Figure 14) is displayed.
- 6 Highlight the newly created tape group by clicking on the name of the tape group in the **Manage Tape Groups** window.
 - The tape group is highlighted and the **Delete Tape Group**, **Configure Tapes**, and **Assign Stacker** buttons are activated.

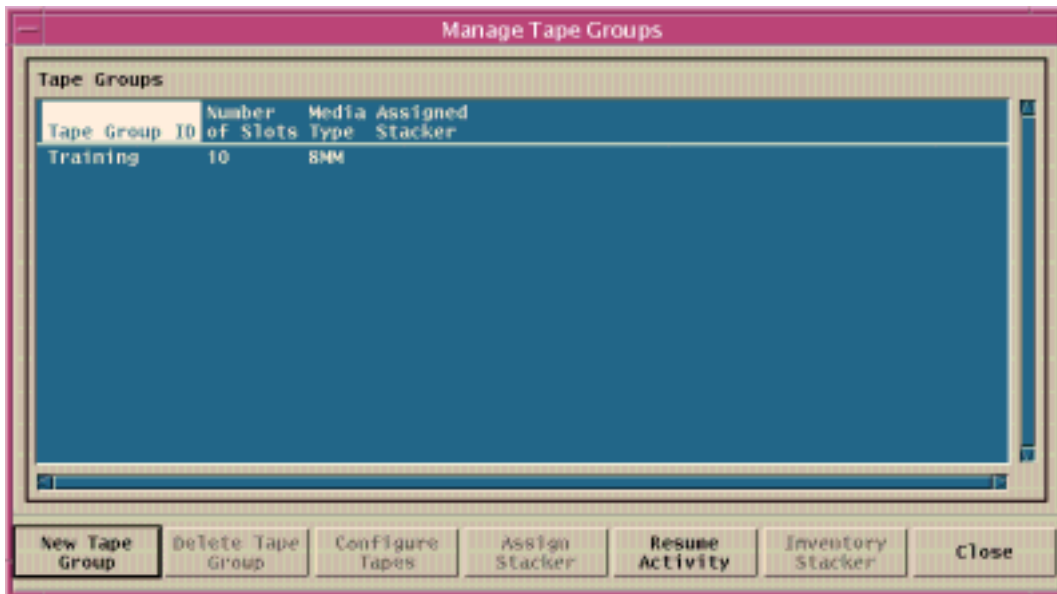


Figure 14. Storage Management Control GUI: Manage Tape Groups Window

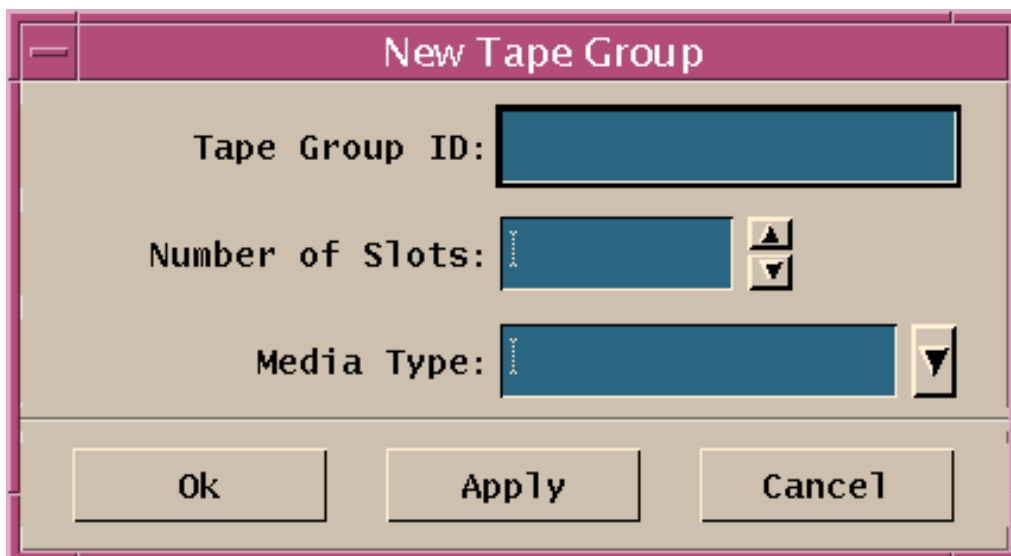


Figure 15. Storage Management Control GUI: New Tape Group Window

- 7 Click on the **Configure Tapes** button in the **Manage Tape Groups** window.
 - The **Configure Tape Group** window (Figure 16) is displayed.
 - 8 Enter the appropriate data for each tape in the sleeve in the **Configure Tape Group** window:
 - Element Number.
 - Use the default value.
 - Capacity (GB)
 - Enter **4**
 - Slot Use.
 - Select **Read/Write Distribution**.
 - Tape ID.
 - Type the bar code of the tape to be inserted into the slot.
 - Leading zeros on the bar code do not have to be entered.
 - The **Assign Use to All Tapes** and the **Assign Capacity to All Tapes** buttons may be used to expedite entering data in the **Configure Tape Group** window.
 - 9 Load the blank tapes in the sleeve and stacker by performing the procedure for **Unloading and Loading Tapes** (subsequent section of this lesson).
 - Verify that the write-protect switch on each tape is set at the **Writable** position.
 - Ensure that the ten tapes are placed into the proper slots in the sleeve so the bar code on each tape matches the slot assignment specified in Step 8.
 - Slot 1 is at the top of the sleeve; Slot 10 is at the bottom of the sleeve.
 - 10 Click on the **OK** button.
 - The **Manage Tape Groups** window (Figure 14) is displayed.
 - 11 Click on the **Assign Stacker** button.
 - The **Assign Tape Group to Stacker** window (Figure 17) is displayed.
 - 12 Click on the stacker into which the tape group (sleeve) was loaded.
 - 13 Click on the **Assign** button.
 - The **Assign Tape Group to Stacker** window is dismissed.
 - 14 Repeat Steps 2 through 13 for each stacker to be set up.
-

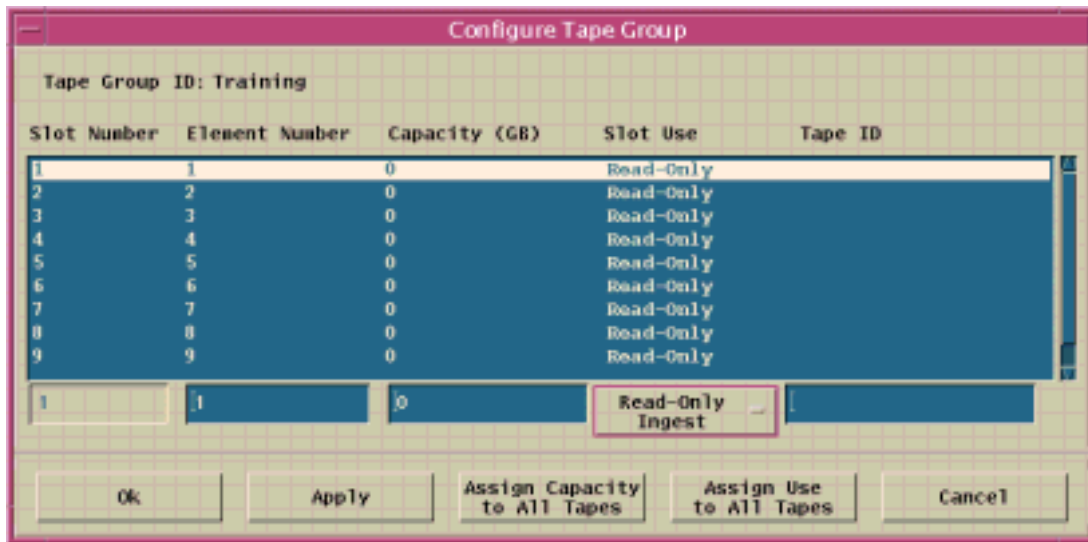


Figure 16. Storage Management Control GUI: Configure Tape Group Window

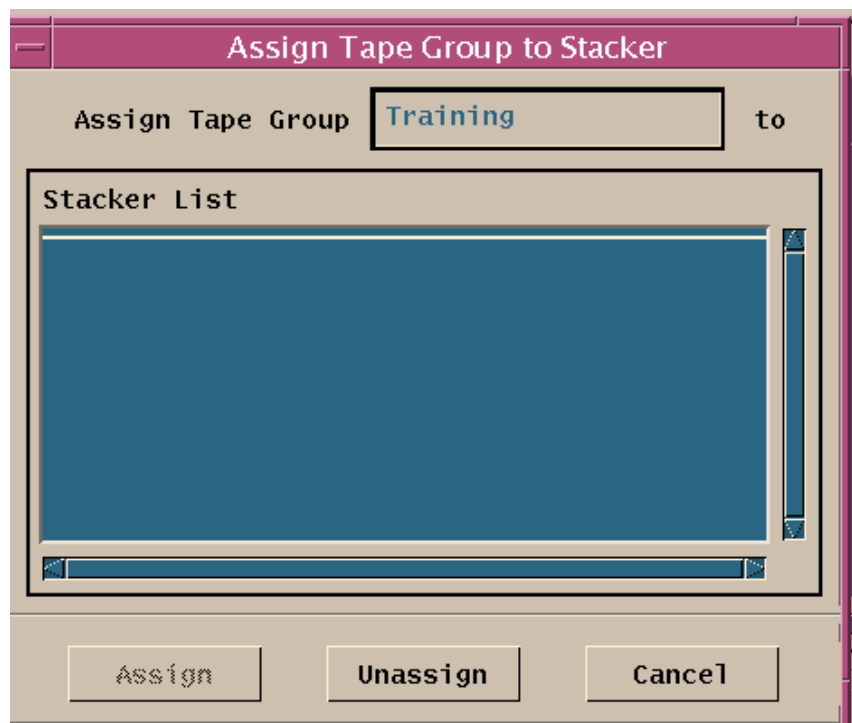


Figure 17. Storage Management Control GUI: Assign Tape Group to Stacker Window

Unloading and Loading Tapes

The procedure that follows involves the following activities:

- Verifying that there are **no** active 8mm distribution requests in the system.
- Unloading an 8mm tape stacker.
- Loading an 8mm tape stacker.

The procedure starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Unloading and Loading Tapes

- 1 Click on the **Refresh** button to update the data displayed on the screen.
- 2 Using the procedure for **Filtering Data Distribution Requests** (previous section of this lesson), filter the list of data distribution requests shown in the **Data Distribution - Track Activity** window to show the requests for distribution on 8mm tape.
- 3 Observe information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** to identify whether there are any pending or active 8mm distribution requests.
 - Status of the request displayed in the **State** column of the **Data Distribution Requests** list **may** be...
 - Waiting for Shipment.
 - Shipped.
 - Suspended.
 - Status of the request displayed in the **State** column of the **Data Distribution Requests** list should **not** be...
 - Pending.
 - Active.
 - Staging.
 - Transferring
- 4 Either wait until all 8mm distribution requests are in an inactive state or suspend all active 8mm data distribution requests using the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).
- 5 Turn the key in the key-lock of the EXB-210 8mm tape stacker to stop tape stacker unit operation.
- 6 Wait for the tape stacker cartridge handling mechanism to finish the current operation and move to the “park” position.
 - The unit’s door interlock mechanism releases when the handling mechanism reaches the “park” position.
- 7 Open the front door of the tape stacker.
- 8 Remove the cartridge holder (sleeve) by pulling out, first from the top, then the bottom.
- 9 Remove the tapes by gently pulling each one straight out from its slot.
 - 8mm tapes can be removed and replaced individually without having to unload and load the entire stacker.

- When the tapes have been removed, unloading has been completed; loading can begin.
- 10 Verify that the write-protect switch on each replacement tape is set correctly for the desired operation.
 - Either **Read-Only** (write-protected) or **Writable**.
 - 11 Hold the tape with the write-protect switch at the bottom, or toward the right, as applicable.
 - 12 Insert the tape by pushing gently straight into a slot in the cartridge holder (sleeve).
 - 13 Repeat Steps 10 through 12 for each tape cartridge to be loaded into the tape stacker.
 - 14 Replace the cartridge holder by inserting the two orientation features on the bottom of the holder (sleeve) into the bottom of the plate then pressing on the top and snapping the holder (sleeve) in place.
 - 15 Close the door to start the process of resuming tape stacker operation.
 - 16 Lock the door by turning the key in the key-lock.
 - After the stacker unit door has been closed, unit attention is returned to the distribution server host.
 - 17 If any 8mm distribution requests were suspended to allow stacker unloading/loading, resume 8mm data distribution request processing using the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).
 - 18 Go to the procedure for **Monitoring/Controlling Data Distribution Requests**.
-

Correcting Tape Faults

Tape faults may prevent the system from writing to a specific tape but not the drive. When the system is unable to write to a tape on a specific drive, the system notifies the Ingest/Distribution Technician and the system restarts the specific operation on a new tape.

Correcting a tape fault involves replacing the faulty tape cartridge. The procedure is identical to that for Unloading and Loading Tapes. What differs is the reason for replacing the tape; i.e., because the tape cartridge is faulty rather than full.

Printing Labels

The procedure for printing labels describes the steps involved in using the **Zebra Bar-One** Design Program to print labels. The procedure starts with the assumption that the Ingest/Distribution Technician has logged in to Windows 95 on the applicable personal computer (PC).

Printing Labels

- 1 Start the **Zebra Bar-One** Design Program on the PC.
 - For example, select **Start → Programs → Zebra Bar-One® → Design Program** from the Windows taskbar at the bottom of the screen.
 - The program to run is c:\barone\labelsys\bin\labels.exe
 - Directory path may vary from site to site.
- 2 Open the file c:\barone\formats\flt.lbl

- Label file is opened.
 - Directory path may vary from site to site.
 - 3 Double-click on the highlighted box in the label.
 - 4 Highlight **Advanced**.
 - 5 Click on the **Define...** button
 - Format of the label appears.
 - 6 Change the 2nd parameter in the **READFILE** function to indicate the starting row of the file.
 - The first label starts with row 1.
 - 7 Click on the **OK** button.
 - 8 Click on the **OK** button.
 - 9 Select **File → Print**.
 - 10 Click on the **OK** button to save.
 - 11 Click on the **OK** button to print.
 - 12 Repeat Steps 3 through 11 until all labels have been printed.
-

Processing 8mm Tapes for Shipment

The **Tape ID's** tab (Figure 18) of the **Data Distribution Operator GUI** allows the DAAC Ingest/Distribution Technician to determine which tape(s) on which stacker(s) contain(s) the data specified in a particular data distribution request. There are two windows on the tab, the **Distribution Tape Requests Items** window and the **Tape ID's Associated with Request** window.

The following information is displayed in the **Distribution Tape Requests Items** window:

- Request ID.
- Media Type.
- # of Tapes.
- # of Tapes Completed.
- State.

The following information is displayed in the **Tape ID's Associated with Request** window:

- Tape ID's.
- Status.
- Location.

The procedure for processing 8mm tapes for shipment starts with the following assumptions:

- All applicable servers are currently running.
- The **Data Distribution Operator GUI** is running.
 - The **Distrib'n Requests** screen (Figure 5) is being displayed.
- The **Storage Management Control GUI** is running.
 - The **Storage Config.** screen (Figure 6) is being displayed.

Processing 8mm Tapes for Shipment

- 1 When a hard medium (8mm) distribution has a status of “Waiting for Shipment” displayed in the **State** column of the **Data Distribution Requests** list, make a note of the Request ID.
- 2 Click on the **Tape ID’s** tab on the **Data Distribution Operator GUI**.
 - The **Data Distribution Operator GUI Tape ID’s** tab (Figure 18) is displayed.

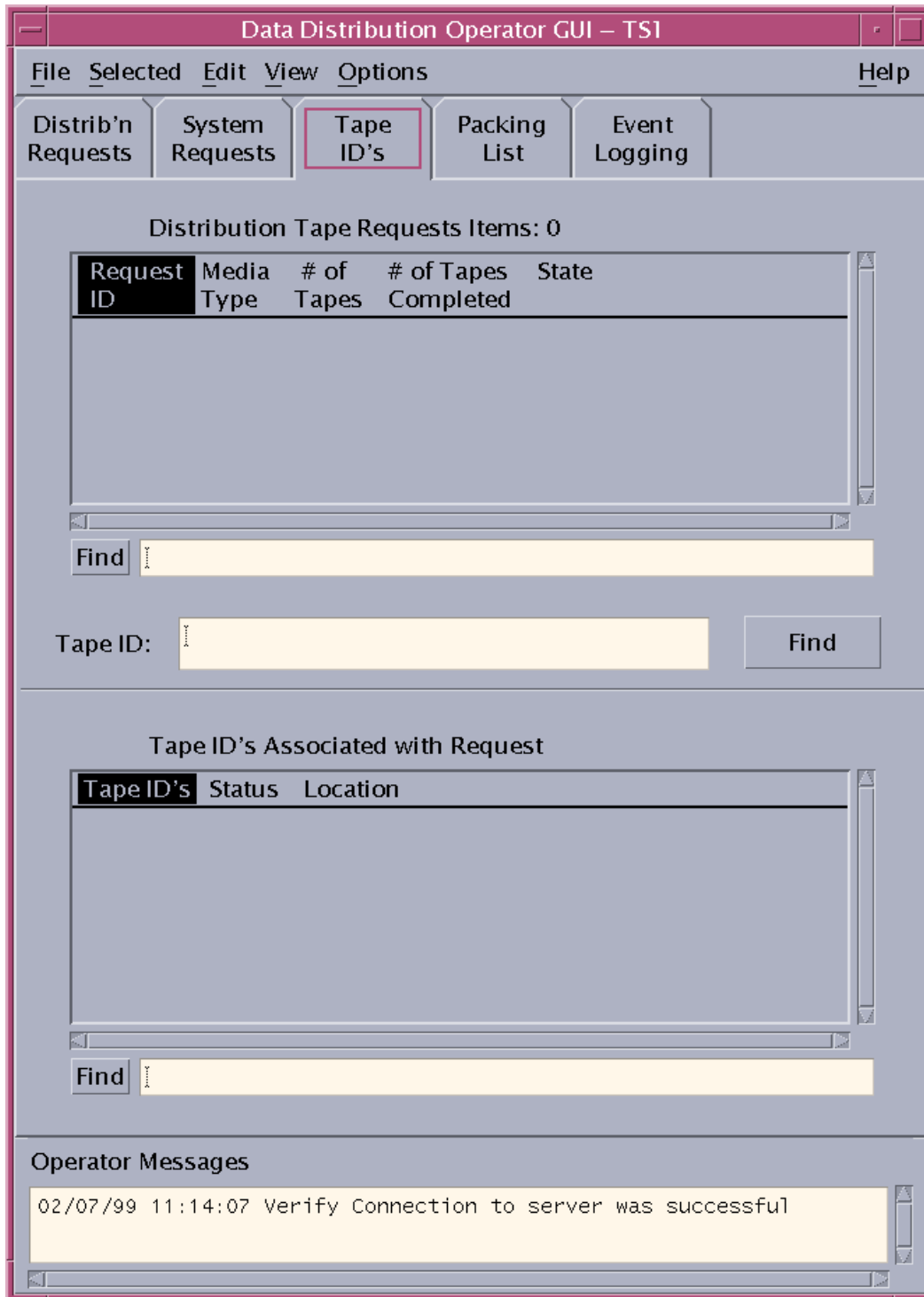


Figure 18. Data Distribution Operator GUI: Tape ID's Tab

- 3 Highlight the Request ID of the 8mm distribution that is “Waiting for Shipment” by clicking on its entry in the **Distribution Tape Requests Items** list.
 - Find the Request ID corresponding to the request identified on **Distrib’n Requests** screen (Step 1).
 - Use the **Find** field and button if necessary.
 - The tape IDs associated with the highlighted request are displayed in the **Tape ID’s Associated with Request** window.
- 4 Make a note of the tape IDs associated with the highlighted request.
- 5 On the **Storage Management Control** GUI click on the **Resource Schedule** tab.
 - The **Storage Management Control GUI Resource Schedule** tab (Figure 13) is displayed.
- 6 Click on the **Find Tapes** button on the **Resource Schedule** tab.
 - The **Tape Information** window (Figure 19) is displayed.
- 7 Type a tape ID in the **Tape ID** field of the **Tape Information** window.
 - Enter the tape ID for one of the tapes associated with the distribution request that is “Waiting for Shipment.”
 - Tape IDs were noted in Step 4.
- 8 Click on the **Find** button in the **Tape Information** window.
 - The following information is displayed in the **Tape Information** window:
 - Tape Status.
 - Request ID.
 - Tape Group ID.
 - Slot Number.
 - It is expected that multi-tape requests may take some time to complete and the tapes associated with the request may be spread across multiple stackers. Therefore, the following suggestions are made:
 - Set up some bins for assembling orders.
 - Label each bin with a unique identifier.
 - Use the bin # (identifier) to identify the temporary storage location of tapes for an order.
- 9 If the tapes associated with a distribution request are going to be placed in a temporary location (bin) while the order is being assembled, type the location (e.g., bin identifier) in the **Location of Tape** field of the **Tape Information** window.

Tape Information

Tape ID: **Find**

Location of Tape:
(Optional Entry)

Tape Status:

Request ID:

Tape Group ID:

Tape Group Information

Figure 19. Storage Management Control GUI: Tape Information Window

- 10 Repeat Steps 7 through 9 for each tape associated with the request.
 - 11 Unload the tapes from the stacker and sleeve by performing the relevant steps of the procedure for **Unloading and Loading Tapes** (previous section of this lesson).
 - If applicable, ensure that the tapes associated with a particular distribution request are put in the appropriate bin.
 - 11 Retrieve the packing list from the printer.
 - 12 Verify that the tape IDs on the packing list correspond with the bar codes on the tapes removed from the stackers.
 - 13 On the **Data Distribution Operator** GUI **Distrib'n Requests** tab click on the row corresponding to the distribution request to highlight the request.
 - 14 Click on the **Mark Shipped** button near the bottom of the **Distrib'n Requests** tab.
 - Status of the request displayed in the **State** column of the **Data Distribution Requests** list changes from "Waiting for Shipment" to "Shipped."
 - 15 Secure the packing list and corresponding tapes with a rubber band.
 - 16 Place the packing list/tapes in the area designated for completed tape orders.
-

Performing QC of Hard Media

Before products are packaged and shipped, the contents of the hard media should be verified. If possible, each media product should be read to ensure that the content meets the following conditions:

- Readable.
- Correct.
- Matches the corresponding packing list.

It may not be possible to perform QC on every product distributed on hard media. Each DAAC develops its own policy for QC based on an evaluation of its QC needs and the effects of QC on the overall throughput of distribution processing. The QC policy will have the goal of achieving the proper balance of throughput with respect to QC processing requirements.

Packaging Hard Media Products for Shipment

After the contents of the hard media products have been verified and a packing list has been printed, the DAAC Ingest/Distribution Technician has the products packaged for shipment. Packaging and shipping are accomplished in accordance with local DAAC policy.

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Troubleshooting Data Distribution Problems

Trouble Symptoms

Troubleshooting is a process of identifying the source of problems on the basis of observed trouble symptoms. Most problems with data distribution can be traced to some part of the Data Server Subsystem:

- Data Distribution.
- Science Data Server.
- Storage Management.

However, a common source of problems involves the reliance on messages or data from other subsystems. Like many other operational areas in ECS, data distribution has interfaces with other subsystems. Consequently, it is possible to trace some problems to another ECS subsystem, including (but not necessarily limited to) those in the following list:

- Communications Subsystem (CSS).
- System Management Subsystem (MSS).

Table 1 describes actions to be taken in response to some common data distribution problems. If the problem cannot be identified and fixed without help within a reasonable period of time, the appropriate response is to call the help desk or submit a trouble ticket in accordance with site Problem Management policy.

Table 1. Troubleshooting Data Distribution Problems

Symptom	Response
Unable to log in to any host (e.g., Distribution Server, g0dis02).	Check with the Operations Controller/System Administrator to ensure that the host is "up."
GUI not displayed when the start-up script has been properly invoked.	<ol style="list-style-type: none"> 1. Ensure that the DISPLAY variable was set properly. 2. Ensure that the xhost command was given on the initial login host. [For detailed instructions refer to the procedure for Launching the Data Distribution GUI (previous section of this lesson).]
Request status change to "Suspended with Errors," indicating a data distribution failure.	<ol style="list-style-type: none"> 1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 2) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," notify the Operations Controller/System Administrator to have the STMGT servers bounced (shut down and immediately restarted). 4. Resume processing of the suspended request. [For detailed instructions refer to the procedure for Suspending/Resuming Data Distribution Requests (previous section of this lesson).] 5. If processing does not resume, refer to the procedure for Recovering from a Data Distribution Failure (subsequent section of this lesson).
Tape fault.	Replace the faulty tape cartridge. [For detailed instructions refer to the procedure for Unloading and Loading Tapes (previous section of this lesson).]
Other problems.	Check the log files (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG, EcDsStStagingDiskServer.ALOG, EcDsStStagingMonitorServer.ALOG) in the /usr/ecs/MODE/CUSTOM/logs directory of the Distribution Server host for error messages. [For detailed instructions refer to the procedure for Checking Log Files (subsequent section of this lesson).]

Table 2. Hosts, Servers, Clients and Other Software Relevant to Data Distribution

HOST	SERVER/CLIENT/OTHER SOFTWARE
Distribution Server (e.g., x0dis02)	Distribution Server (EcDsDistribution Server) 8mm Server (EcDsSt8MMServer) D3 Server (EcDsStD3Server)
Working Storage (e.g., x0wkg01)	Archive Server (EcDsStArchiveServer) Staging Monitor Server (EcDsStStagingMonitorServer) Staging Disk Server (EcDsStStagingDiskServer)
SDSRV Server (e.g., x0acs03)	Science Data Server (EcDsScienceDataServer) HDF EOS Server (EcDsHdfEosServer)
Access/Process Coordinators (APC) Server (e.g., x0acg01)	Archive Server (EcDsStArchiveServer) FTP Distribution Server (EcDsStFtpDisServer) Staging Monitor Server (EcDsStStagingMonitorServer) Staging Disk Server (EcDsStStagingDiskServer) Pull Monitor Server (EcDsStPullMonitorServer)
FSMS Server (e.g., x0drg01)	Archive Server (EcDsStArchiveServer) Staging Monitor Server (EcDsStStagingMonitorServer) Staging Disk Server (EcDsStStagingDiskServer)
Interface Server 02 (e.g., x0ins01)	Subscription Server (EcSbSubServer) Event Server (EcSbEventServer)

Recovering from a Data Distribution Failure

The automated data distribution processes (push and pull) normally do not require intervention by the Ingest/Distribution Technician. However, when a data distribution fault (error) occurs, there may be a requirement for action to recover from the error. For example, recovery actions may be made necessary by the failure of storage management to acquire granules from the archive so they can be distributed. When a fault (error) occurs, the request status on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** is likely to change to "Suspended with Errors."

The Ingest/Distribution Technician may use the **Data Distribution Operator GUI Distrib'n Requests** tab (refer to the section on Monitoring/Controlling Data Distribution Requests) and/or log files on various host machines to review the failure event.

When recovering from a data distribution failure, use the procedure that follows. The procedure starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Distrib'n Requests** screen (Figure 5) is being displayed.

Recovering from a Data Distribution Failure

- 1 Observe the information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** to identify distribution requests with a status of "Suspended with Errors."
 - 2 Perform the procedure for **Handling an Acquire Failure** (subsequent section of this lesson).
 - 3 If additional information is needed, open and read the appropriate log file in the **/usr/ecs/MODE/CUSTOM/logs** directory on the appropriate host machine(s).
 - Applicable host machines are listed in Table 2. Hosts, Servers, Clients and Other Software Relevant to Data Distribution.
 - For detailed instructions refer to the procedure for **Checking Log Files** (subsequent section of this lesson).
 - 4 If the problem distribution is a hard media distribution and the acquire did not fail (but the data were not written to the tape), replace the tape.
 - For detailed instructions refer to the procedure for **Unloading and Loading Tapes** (subsequent section of this lesson).
 - 5 If the problem could not be identified through any of the preceding steps, call the help desk or submit a trouble ticket in accordance with site Problem Management policy.
 - 6 When the problem has been corrected, review the information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** to determine whether the distribution request resumed processing.
 - 7 If the distribution request does not resume processing after the problem has been corrected, return to Step 2.
-

Handling an Acquire Failure

Diagnosing an acquire failure involves examining the following system log files and directories involved in the process:

- Science Data Server ALOG File (EcDsScienceDataServer.ALOG file).
- Archive Server ALOG File (EcDsStArchiveServer.ALOG).
- Staging Area.
 - Presence of the relevant file.
 - Staging Disk ALOG File (EcDsStStagingDiskServer.ALOG or EcDsStStagingMonitorServer.ALOG).
 - Space available in the staging area.

Checking the Science Data Server ALOG File

The procedure for checking the EcDsScienceDataServer.ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Science Data Server ALOG File

- 1 Log in to the SDSRV Server host (e.g., e0acs05, g0acs03, l0acs03, n0acs04) as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution GUI** (previous section of this lesson).
- 2 Type **cd /usr/ecs/mode/CUSTOM/logs** then press **Return/Enter**.
- 3 Type **view EcDsScienceDataServer.ALOG** then press **Return/Enter**.
 - Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**, **tail**) can be used to review the log file.
- 4 Review the log file to determine whether the relevant file was successfully acquired.
 - The EcDsScienceDataServer.ALOG file should contain entries identifying the file to be acquired by the ShortName of the corresponding ESDT.
 - The EcDsScienceDataServer.ALOG file should contain entries regarding the acquire activity. The following types of messages should be included in the ALOG file:
Msg: File 1 to be distributed: :SC:MOD03.001:1369:1.HDF-EOS
Priority: 0 Time : 07/29/98 12:35:42
PID : 24279:MsgLink :1684108385 meaningfulname
:DsSrWorkingCollectionDistributeOneDistributFile
Msg: File 2 to be distributed: SCMOD03.0011369.met
 - If the ShortName does not appear in the ALOG file, with a timestamp corresponding to the time of the attempted acquire, SDSRV may not be running, or may not be communicating with other servers.
 - If the ALOG file does contain entries for that ShortName, and indicates that two files (the file and its associated metadata file) are being distributed, SDSRV has completed its role in the acquire.
 - If the ALOG contains the ShortName, and also contains an error showing that the data file time stamp does not match the time stamp required by the acquire, the data file needs to be removed from the Science Data Server and reinserted.
 - This is usually done using a script called DsDbCleanGranules.
- 5 Type **:q!** then press **Return/Enter** to quit the view application.
- 6 If the ShortName does **not** appear in the ALOG file, with a timestamp corresponding to the time of the attempted acquire, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 2) are “up.”
 - If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
 - Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.
- 7 If the ALOG contains the ShortName, and also contains an error showing that the data file time stamp does not match the time stamp required by the acquire, notify the Archive Manager to have the data file removed from the Science Data Server and reinserted.
 - Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.
- 8 If the ALOG file does contain entries for the ShortName and indicates that two files (the file and its associated metadata file) are being distributed, continue with the procedure for **Checking the Archive Server ALOG File**.

Checking the Archive Server ALOG File

Acquire success from the Science Data Server is only part of the acquire process. Since any file entered into SDSRV is stored in the archive, the Archive Server must be involved during an acquire. Consequently, it may be useful to inspect the Archive Server ALOG file (EcDsStArchiveServer.ALOG) to check for error messages associated with the ShortName of the file type.

The procedure for checking the archive server ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Archive Server ALOG File

- 1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution GUI** (previous section of this lesson).
 - 2 Type **cd /usr/ecs/MODE/CUSTOM/logs** then press **Return/Enter**.
 - 3 Type **view EcDsStArchiveServer.ALOG** then press **Return/Enter**.
 - Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**, **tail**) can be used to review the log file.
 - 4 Review the log file to determine whether the relevant file was successfully acquired.
 - 5 Type **:q!** then press **Return/Enter** to quit the view application.
 - 6 If the relevant file was **not** successfully acquired, notify the Archive Manager to have the data file reacquired for Data Processing.
 - Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.
 - 7 If the relevant file was successfully acquired, continue with the procedure for **Checking the Staging Disk**.
-

Checking the Staging Disk

During an acquire, files are copied to a staging area as an intermediate step before distributing them to their destination. As part of diagnosing an acquire failure it is useful to check the staging area to ascertain whether the files have completed part of their journey. Both the file and a subdirectory containing metadata information should be written to the staging area.

The procedure for checking the staging disk starts with the assumption that the operator has logged in to the ECS system.

Checking the Staging Disk

- 1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution GUI** (previous section of this lesson).

- 2 Type **cd /usr/ecs/MODE/CUSTOM/drp/archivehost/data/staging/user#** then press **Return/Enter**.
 - 3 Type **ls -lrt** then press **Return/Enter**.
 - 4 Review the directory to determine whether the relevant file was successfully staged.
 - 5 If the relevant file was successfully staged, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 2) are “up.”
 - If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
 - Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.
 - 6 If the relevant file was **not** successfully staged, continue with the procedure for **Checking the Staging Disk ALOG File** to determine why it was not successfully staged.
-

Checking the Staging Disk ALOG File

If the failure occurs in copying the files to the staging area, then the Staging log files (EcDsStStagingDiskServer.ALOG or EcDsStStagingMonitorServer.ALOG) may reveal the cause.

The procedure for checking the staging disk ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Staging Disk ALOG File

- 1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution GUI** (previous section of this lesson).
 - 2 Type **cd /usr/ecs/MODE/CUSTOM/logs** then press **Return/Enter**.
 - 3 Type **view EcDsStStagingDiskServer.ALOG** or **EcDsStStagingMonitorServer.ALOG** then press **Return/Enter**.
 - Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**, **tail**) can be used to review the log file.
 - 4 Review the log file to determine whether the relevant file was successfully staged.
 - 5 Type **:q!** then press **Return/Enter** to quit the view application.
 - 6 If the relevant file was successfully staged, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 2) are “up.”
 - If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
 - Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.
 - 7 If the relevant file was **not** successfully staged, continue with the procedure for **Checking the Space Available in the Staging Area**.
-

Checking the Space Available in the Staging Area

Failure can be caused by a lack of space in the staging area.

The procedure for checking the space available in the staging area starts with the assumption that the operator has logged in to the ECS system.

Checking the Space Available in the Staging Area

- 1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution GUI** (previous section of this lesson).
 - 2 Type `cd /usr/ecs/MODE/CUSTOM/drp/archivehost/data/staging/user#` then press **Return/Enter**.
 - 3 Type `df -k` . then press **Return/Enter**.
 - 4 Review the available space listed to determine whether there is adequate space for staging the relevant file.
 - 5 If there is **not** adequate space for staging the relevant file, notify the Operations Controller/System Administrator of the lack of space.
 - 6 If there is adequate space for staging the relevant file, notify the Archive Manager to have the data file reacquired for Data Processing.
 - 7 Go to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.
-

Checking Log Files

Log files can provide indications of the following types of problems:

- DCE problems.
- Database problems.
- Lack of disk space.

The procedure for checking log files starts with the assumption that the operator has logged in to the ECS system and the appropriate host.

Checking Log Files

- 1 Access a terminal window logged in to the appropriate host.
 - Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host has the following data distribution and storage management log files:
 - EcDsDdistGui.ALOG.
 - EcDsDistributionServer.ALOG.
 - EcDsSt8MMServer.ALOG.
 - EcDsStD3Server.ALOG.
 - EcDsStPrintServer.ALOG.
 - EcDsStStagingDiskServer.ALOG.
 - EcDsStStagingMonitorServer.ALOG.

- EcDsStmgtGui.ALOG.
 - Working Storage (e.g., e0wkg01, g0wkg01, l0wkg01) host has the following storage management log files:
 - EcDsStArchiveServer.ALOG.
 - EcDsStFtpDisServer.ALOG.
 - EcDsStStagingDiskServer.ALOG.
 - EcDsStStagingMonitorServer.ALOG.
 - SDSRV Server (e.g., e0acs05, g0acs03, l0acs03, n0acs04) host has the following science data server log files:
 - EcDsHdfEosServer.ALOG.
 - EcDsScienceDataServer.ALOG.
 - EcDsScienceDataServerClient.ALOG.
 - EcDsSdSrvGui.ALOG.
 - APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) host has the following storage management log files:
 - EcDsStArchiveServer.ALOG.
 - EcDsStFtpDisServer.ALOG.
 - EcDsStPullMonitorServer.ALOG.
 - EcDsStStagingDiskServer.ALOG.
 - EcDsStStagingMonitorServer.ALOG.
 - FSMS Server (e.g., e0drg01, g0drg01, l0drg01, n0drg01) host has the following storage management log files:
 - EcDsStArchiveServer.ALOG.
 - EcDsStFtpDisServer.ALOG.
 - EcDsStStagingDiskServer.ALOG.
 - EcDsStStagingMonitorServer.ALOG.
 - Interface Server 02 (e.g., e0ins01, g0ins01, l0ins01, n0ins01) host has the EcSbSubServer.ALOG file.
- 2 Type **cd /usr/ecs/MODE/CUSTOM/logs** then press **Return/Enter**.
- Change directory to the directory containing the data distribution, science data server, or storage management log files (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG, EcDsSt8MMServer.ALOG).
- 3 Type **pg filename** then press Return/Enter.
- **filename** refers to the data distribution, science data server, or storage management log file to be reviewed (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG, EcDsSt8MMServer.ALOG).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **more**, **tail**) can be used to review the log file.
- 4 Review the log file to identify problems that have occurred.
- 5 Respond to problems as follows:
- DCE problems.
 - Notify the Operations Controller/System Administrator of suspected DCE problems.

- Database problems.
 - Verify that relevant database servers are running.
 - Check for lack of (or corruption of) data in the database using either a database browser or isql commands.
 - Notify the Database Administrator of suspected database problems.
 - Lack of disk space.
 - Remove unnecessary files.
 - Notify the Operations Controller/System Administrator of recurring disk space problems.
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Practical Exercise

Introduction

This exercise is designed to give the students practice in data distribution activities.

Equipment and Materials

One ECS workstation per student.

Statement of the requirements for the exercise.

Version 2.0 Operations Tools Manual for the ECS Project, 609-CD-003-002, one copy per student.

Mission Operation Procedures for the ECS Project, 611-CD-004-003, one copy per student.

Launching the Data Distribution and Storage Management GUIs

The exercise involves launching the data distribution and storage management GUIs. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/ requirements for launching the data distribution and storage management GUIs. The student launches the data distribution and storage management GUIs as specified in the requirements.

Perform the following steps:

1. Log in to the distribution server host using secure shell.
2. Set the environmental variables.
3. Enter the path to the utilities directory.
4. Enter the command to start the **Data Distribution Operator** GUI.
5. Enter the command to start the **Storage Management Control** GUI.

Monitoring/Controlling Data Distribution Requests

The exercise involves monitoring and controlling data distribution requests via ftp push, ftp pull, or 8mm tape cartridge. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for monitoring/controlling data distribution requests. The requirements may include instructions to configure data distribution polling, filter data distribution requests, change the priority of a distribution request, or change the status of a distribution request (e.g., cancel, suspend, resume, or mark a distribution request as “shipped”). The student monitors/controls data distribution requests as specified in the requirements.

Perform the following steps:

1. Monitor/control data distribution requests as specified in the written or stated requirements.
2. Configure data distribution polling as specified in the written or stated requirements.

3. Filter requests as necessary.
4. Change the status of distribution requests as specified in the written or stated requirements.

Setting Up the 8mm Tape Stackers

The exercise involves setting up the 8mm stackers for data distribution purposes. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for setting up the 8mm stackers for data distribution purposes. The student sets up the 8mm stackers as specified in the requirements.

Perform the following steps:

1. Select the **Resource Schedule** tab of the **Storage Management Control** GUI.
2. Set up a new tape group (using the **Manage Tapes** function) for the tapes to be put in the stacker.
3. Load the blank tapes in the sleeve and stacker.
4. Assign the tape group to the stacker.

Unloading/Loading 8mm Tape Cartridges for Data Distribution Purposes

The exercise involves unloading/loading 8mm tape cartridges for data distribution purposes. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for unloading/loading 8mm tape cartridges for data distribution purposes. The student unloads and loads an 8mm tape stacker as specified in the requirements.

Perform the following steps:

1. Verify that there are **no** active 8mm distribution requests in the system.
2. Unload the 8mm tape stacker.
3. Load the 8mm tape stacker.

Printing Labels

The exercise involves printing labels for 8mm tape cartridges. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for printing labels for 8mm tape cartridges. The student prints labels as specified in the requirements.

Perform the following steps:

1. Start the Zebra Bar-One Design Program on the PC.
2. Open the label file.
3. Set up the file to print.
4. Print the file.

Processing 8mm Tapes for Shipment

The exercise involves processing 8mm tapes for shipment. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements to process 8mm tapes for shipment. The student processes 8mm tapes for shipment as specified in the requirements.

Perform the following steps:

1. On the **Data Distribution Operator GUI Distrib'n Requests** tab identify an 8mm distribution request that is "Waiting for Shipment."
2. On the **Data Distribution Operator GUI Tape ID's** tab identify the 8mm tapes associated with the distribution request.
3. On the **Storage Management Control GUI Resource Schedule** tab determine the location of the 8mm tapes associated with the distribution request.
4. Unload the 8mm tapes associated with the distribution request from the stacker.
5. Verify that the tape IDs on the packing list correspond with the bar codes on the 8mm tapes.
6. On the **Data Distribution Operator GUI Distrib'n Requests** tab mark the distribution request as "shipped."

Troubleshooting Data Distribution Problems

The exercise involves troubleshooting data distribution problems. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary trouble symptom information and requirements for troubleshooting the problem(s). The student reviews the specified trouble symptoms, takes action to correct the problem(s), and responds to questions concerning the possible cause(s).

Perform the following steps:

1. Review the trouble symptoms.
2. Check for an acquire failure.
3. Check appropriate log files as necessary.
4. Take action to correct the problem(s).
5. Verify that distribution request processing has resumed.
6. Respond to questions concerning the possible cause(s) without error.

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Slide Presentation

Slide Presentation Description

The following slide presentation represents the slides used by the instructor during the conduct of this lesson.

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